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THE ABRIDGMENT

FOR THE FISCAL YEAR ENDING JUNE 30, 1904.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES

TO THE

TWO HOUSES OF CONGRESS

AT THE BEGINNING OF THE

THIRD SESSION OF THE FIFTY-EIGHTH CONGRESS,

WITH THE

REPORTS OF THE HEADS OF DEPARTMENTS

AND

SELECTIONS FROM ACCOMPANYING DOCUMENTS.

IN TWO VOLUMES.

VOL. 2.

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CONTENTS VOLUME II.

	Page.
REPORT OF THE SECRETARY OF THE NAVY	917–941
Chief of the Bureau of Yards and Docks	942–949
Chief of the Bureau of Equipment	949–957
Chief of the Bureau of Navigation	958–991
Chief of the Bureau of Ordnance	992–1014
Chief of the Bureau of Construction and Repair	1015–1034
Chief of the Bureau of Steam Engineering	1034–1067
Paymaster-General	1068–1078
Surgeon-General	1079–1101
Commandant of the Marine Corps	1102–1112
REPORT OF THE SECRETARY OF THE INTERIOR	1113–1358
Commissioner of the General Land Office	1359–1393
Commissioner of Patents	1394–1397
Commissioner of Pensions	1397–1410
Commissioner of Indian Affairs	1411–1442
REPORT OF THE SECRETARY OF AGRICULTURE	1443–1552
REPORT OF THE SECRETARY OF COMMERCE AND LABOR	1553–1594
Director of the Census	1595–1611
Commissioner of Corporations	1611–1646
REPORT OF THE ISTHMIAN CANAL COMMISSION	1647–1698

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REPORT

OF THE

SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, November 23, 1904.

The PRESIDENT:

SIR: In submitting the annual report of this Department for the last fiscal year attention is invited to the reports of the chiefs of the several bureaus and offices, in which will be found detailed information respecting the work of the several branches of the Navy under their immediate supervision.

THE NAVAL APPROPRIATIONS.

The naval estimates for the next fiscal year are large, the largest ever submitted, notwithstanding the fact that they have been cut down from those sent in by the bureaus more than seventeen million dollars. We have asked for less than the money actually required to continue the naval programme as laid down by the General Board, of which Admiral Dewey is the head, notwithstanding all who have studied the question carefully agree that this programme should be carried out.

The past year was an important one in the history of our naval construction. Never before were so many war ships launched by this or any other nation in one year. Vessel for vessel and type for type I believe our new ships will compare favorably with those of any navy afloat, and every American should be proud of the progress and character of work now being accomplished, not only in construction but in all branches of the service.

New ships necessarily require more officers, more marines, and more enlisted men, and the appropriations are quite likely to increase steadily for some years to come. The more ships we have the greater our fixed charges will be and the greater our facilities necessarily must be, in the way of yards and docks, and the ability to make repairs and take proper care of the fleet. It is just as essential to keep our ships

in thorough repair as it is to build them in the first place, and to permit them to run down for any length of time and go without repairs would be the height of folly. It costs a great deal of money to keep the fleet moving in maneuvers and target practice, but this is the only way officers and men can gain experience at sea; and it is our well-defined policy to maintain a high standard of efficiency throughout the service. Practice makes perfect in the Navy, as everywhere else.

Last year the Navy cost a little over a dollar per capita. It cost little compared to what war would cost, and it is the best insurance we have against war. We want such a navy in size, style, and "sand" that no other navy will ever desire an engagement with us. It is our greatest exhibit in favor of peace. We are bound to occupy a prominent position among the great nations of the earth, and while doubtless we shall always be in the lead in every international movement to promote peace, it is much better for us to be at all times so well prepared for war that war will never come. I am sure that the people of the United States will approve of a navy that is well prepared at all times to take care of their defenses and to protect their position in the world. This is all we are trying to accomplish.

INCREASE OF PERSONNEL.

Attention is earnestly invited to the recommendations made by the Chief of the Bureau of Navigation respecting the need for more officers and men in order to carry on the work of the Navy. It is useless to build ships unless provision is made to man, care for, and use them. The best results will surely be obtained by keeping ships and men at work developing efficiency in all the lines of active service. Most of our ships and all of our shore stations are now short of officers, and with the completion of vessels under construction this condition will become more serious.

The deficiency of officers is not limited to the line alone, but is felt in every corps of the service.

BATTLE SHIPS v. TORPEDO BOATS.

The lessons of the war in the East thus far are the same as those of the Spanish war with respect to the relative value and uses of battle ships, torpedo boats, and destroyers. Weight of metal, heavy guns, and hard hitting, whether at long or short range, still do the most effective work. The day of the battle ship is not over, and the sphere of the lighter vessels, while important, is auxiliary only.

These conclusions, reached by the General Board and the Board on Construction as the result of careful study of recent naval progress and present conditions, in the light of the events of the past few months in Eastern seas, confirm in a most striking manner your own views on

the subject, expressed more than two and a half years ago. Upon the files of the Navy Department I find a letter addressed by you to the Secretary of the Navy, February 22, 1902, in which you assign the place of first importance to the heavier vessels of modern fleets; conclude that in the future as in the past battle ships must hold the battle line; and emphasize the point by taking the ground that the place of the admiral in war, and probably also in peace, is on board the best fighting ship of his squadron. In that letter, after expressing a wish for the views in the matter of leading officers of the service, you said:

> One salient point in connection with the Santiago battle seems to me to be the unwisdom of having had the two admirals on ships concerning which it could be said that they were not to fight in the line. The analogy between an admiral in a sea fight and a general in a land fight does not seem to me to hold, if only from the fact that the admiral has inseparably connected with his person a fighting unit corresponding to a brigade on shore. It does not seem to me desirable that an admiral should be expected to keep out of the fight. At Santiago the Spanish ships were only armored cruisers. If our ships were pitted against battleships of a first-class power an armored cruiser might have a very hard time, and yet it might be to the very last degree demoralizing in a closely contested battle to see the admiral sheering out of the fight. Every great admiral, from the days of Blake and Van Tromp and De Ruyter to those of Nelson and Farragut, has taken his place in one of the best fighting ships and has been in the forefront of the battle. At Lissa the victorious Austrian admiral, Tegethoff, followed this custom with splendid results, and his defeated foe owed part of his ill success to the fact that he was not on one of the most formidable ships, and did not go into the thick of the fight, keeping outside in a vain attempt to exercise such a supervision over his squadron as on shore the colonel of a regiment would exercise over his individual captains.
>
> Unless good reason can be shown me to the contrary, I intend to have an order issued that the Admiral shall have his place in one of the great fighting ships whenever there is war. I should also like to know if there is any reason why he should not also be in a great fighting ship in time of peace.

Your judgment of the place of the battle ship in the Navy of the future, as set forth in the above quotation from your letter of February 22, 1902, is that of naval experts to-day. With respect to the place of the torpedo boat it is remarkable that no terms can be found in which to state present conclusions with more clearness and precision than those employed in a report on "the value of torpedo boats" made by you more than six years ago (February 18, 1898), while Assistant Secretary of the Navy. Significant extracts from that report are the following:

> I herewithinclose * * * two papers just received through the Chief of the Bureau of Intelligence. The first * * * sets forth in graphic form the unsuitability of torpedo boats to do duty in rough weather; an unsuitability which must always be taken into account, even on the occasions when it is necessary to disregard it. The other paper is a report of a committee of investigation on behalf of the French Admiralty, undertaken to inquire into the reason for the multitude of casualties in the * * * torpedo-boat squadron.
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> * * * * * * *
>
> The margin of safety in these boats is exceedingly small. In the effort to attain the maximum of speed at the sacrifice of everything else the structure has been

made so delicate that accidents continually occur if the boats are driven hard or if they get into a heavy seaway, while the scantling is so light that to scrape a dock or touch a shoal may mean rather serious temporary injury.

* * * * * * *

Every war ship, big or small, is of course nothing but a compromise—speed, safety, gun power, protection, and coal endurance being each and every one sacrificed to a greater or less extent in order that any of the others may be developed at all. A torpedo boat must be fast, for it must be able under favorable conditions to deal its blow and then escape if escape be possible. Only about a minute will elapse between the time when a torpedo boat becomes visible under the searchlight and the time when it discharges its torpedoes; for, of course, a torpedo boat can work only by surprise.

* * * * * * *

Experience with the torpedo boat in foreign navies, no less than in our own, shows that while under favorable circumstances it is undoubtedly a most terrible engine of war, these favorable circumstances may very rarely occur. * * * Nothing could be more foolish than the talk of substituting torpedo boats for battle ships and cruisers. Except when working at night or under conditions which favor a surprise the torpedo boat is absolutely helpless against any seagoing ship armed with rapid-fire guns, whether the ship be large or small, and under no circumstances is it fit to do rough work at sea or to perform any of the duties taken as a matter of course by regular seagoing craft. Torbedo boats should never be used as dispatch boats except under unusual conditions. They are fit to make night raids on an enemy's squadron near the coast when the conditions are favorable or under exceptional circumstances to take part in the closing scene (but only the closing scene) of a great battle, and they are fit for little else. Of course this means that they are fit for a function of enormous importance, but it must not be supposed that such a function is all that is necessary to have a modern navy to perform.

* * * * * * *

It is possible that we may be able to reduce the extreme fragility of torpedo boats; nevertheless, they will always remain as fragile as they are formidable. Every war vessel of the highest efficiency, from a battle ship down, is itself a huge bit of delicate mechanism and its efficiency is largely conditioned upon features of its structure which are liable at any time to suffer serious accident. There is always risk of damage to such a bit of mechanism, and the risk must be accepted as part of the price paid for the immense increase of efficiency in the weapon itself. * * * An old style frigate was practically safe from any damage but shipwreck. A modern battle ship, with its vast load of armor and armament, and a multitude of engines and of every kind of machinery aboard it, is incomparably more delicate; and yet such a battle ship could, without damage to itself, sweep out of existence all the fleets of all the nations in the world as they were at the time of Trafalgar. A great nation must have a great navy. * * * If because of * * * accidents it stops work, whether on dry docks, battle ships, or torpedo boats, it will prove that it is not a great nation and that it is not entitled to rank as such in the world. Even in the old days of sailing ships, the British, toward the close of the gigantic Napoleonic wars, suffered much heavier losses annually by shipwreck and the disasters due to existence on the sea than by the guns of the foe. In recent times the melancholy list of accidents in every foreign navy is remembered by all who take interest in these services. Until the recent disaster to the Maine, our own new navy had been extraordinarily free from such accidents. Nevertheless, occasional disasters of great severity and continual accidents of minor importance are sure to occur.

If Great Britain had stopped maneuvering her squadrons after the sinking of the *Captain,* the *Vanguard,* or the *Victoria;* if Germany had abandoned any effort to upbuild her navy after the sinking of the *Kurfürst;* if the Russians had ceased to

build ships when the *Gangout* sank; if the French had given up torpedo boats when they found that two-thirds of those in commission in the Mediterranean were disabled by accident, then each and all of these nations would have shown that they were unfit any longer to stand as great powers, that they lacked the nerve to face the ordinary punishment which must be encountered by every nation in traveling the road to greatness.

Exactly the same judgment will be deservedly passed upon us if for these reasons, or for any other reasons, we refuse to go on with the upbuilding of our Navy, whether our refusal takes the form of stopping work on dry docks, battle ships, or torpedo boats.

The General Board and the Board on Construction, after weighing the results of recent developments, have reached conclusions in full accord with those expressed by you in the paper above quoted, and a schedule of naval construction in harmony with these views will be submitted later.

GENERAL STAFF OR BOARD.

The question of the need of a general staff or board to serve the Secretary of the Navy in an advisory capacity was carefully considered by my predecessor. I do not feel that I can add anything of value to his discussion of the subject. It is conceded that the upbuilding, preservation, maintenance, and efficiency of the Navy is to be attained only by unceasing exercise of trained vigilance in all departments, under intelligent and consistent general supervision. This is essential in order that abnormal strength may not occur in one direction at the cost of weakness elsewhere. It is further considered that when the desired results are attained, and we have a satisfactory aggregation of ships well equipped and manned by a trained body of officers and men, the field for the exercise of wise administration is merely broadened. A navy is costly, but war is more so. The chief object of our Navy is to prevent war. On the subject of "preparedness" the Chief of the Bureau of Navigation says:

Although it is still too early to draw final conclusions from the war in the Far East, one cardinal military principle has received new and striking confirmation; that is preparedness and the swiftness of action which can be successful only with thorough preparedness. Readiness for immediate action on the outbreak of war requires that the whole field shall have first been maturely considered, and that all probable operations and contingencies shall have been suitably provided for down to the smallest detail whose need can be foreseen.

It is only fair to say that the work now being done by the General Board, with Admiral Dewey at its head, is directly in the line of preparation for war and is of the greatest value.

VICE-ADMIRALS.

Under the old policy of the Navy it was the practice to send single ships here and there, as the general public interests or those of the service might demand. In accordance with this practice our naval

force was, as a rule, scattered, vessels visiting distant seas singly. Under such conditions, so far as the handling of fleets and squadrons was concerned, there was no special need for an officer of the rank of vice-admiral.

The present policy, however, brings about different conditions and demands. Our ships now move not singly but in company, and the handling of vessels of all classes in fleet and squadron evolutions is regarded as an essential feature of naval training. During the annual maneuvers exercises are had involving the disposal of separate and supporting divisions of fleets and squadrons in such manner as to bring the entire array of battleships, monitors, armored and unarmored cruisers, destroyers, torpedo boats, scouts, dispatch steamers, and auxiliaries of every description into cooperation and action as a military unit, a homogeneous weapon of offense and defense.

For the maneuvering of masses of ships thus assembled and operating as fleets and squadrons and divisions thereof, gradations in rank appropriate to gradations in command are desirable.

Furthermore, our interests in the Far East and elsewhere have become so important that the Navy should have one or more officers of high rank available for service wherever their presence may be appropriate. In case of friendly action in conjunction with other nations in the interests of peace and good order—a contingency happily becoming more and more frequent—it is the ranking officer who takes command of any combined movement, without regard to the strength or weakness of the nation he represents or the force under his orders.

On the Asiatic Station, for example, other nations are represented by a naval force under command of a vice-admiral. If this Government has no officer of that rank there, upon critical occasions occurring hereafter it will be, as it has been in the past, relegated to subordinate place and must yield leadership.

For these reasons, and for the same reason that Congress created ambassadors to certain countries, I concur in the recommendation of the Chief of the Bureau of Navigation that provision be made for two vice-admirals of the Navy.

AGE AND COMMAND RANK.

I fully concur with the Chief of the Bureau of Navigation in the opinion that officers of the Navy attain command rank too late in life. It is no disparagement of the senior officers of the service to say that we should have younger men in command of our ships in time of peace as well as in time of war.

The early acquirement of the habit of command is desirable; self-reliance, unhesitating decision, and vigorous action in emergencies are important; and it is essential that arduous command, the incessant

strain imposed upon an officer responsible for the movements and safety of a battle ship, for example, whether in peace or war, should not devolve upon an officer for the first time as he approaches the age of retirement. Long before that he should have become familiar with the obligations and responsibilities, and should have learned by practical experience the duties, of important command. Better results will be obtained from young men with records to make than from old men with reputations to maintain.

The average age of the captains of our battle ships is now 57 years. In the English and German navies the average age of captains is 48, nearly ten years less. The captains commanding the five heaviest Japanese ships now in service average 45¾ years of age. A naval officer who is not competent to command at the age of 45 probably never will be.

The condition of our own service in this particular promises to grow rapidly worse instead of better, in consequence of the large influx of officers into the lower, without corresponding increase in the upper grades. These unfortunate conditions are not confined to the captains' list, but extend below to commanders and above to flag officers.

Considering that future wars must be waged by young officers, the Chief of the Bureau of Navigation suggests that all captains upon reaching the age of 60 be retired; that this age limit be decreased one year for each two years from the passage of the act, until the age limit becomes 57; that this limit be reduced to 55 after the next two years; that all commanders upon reaching the age of 55 be retired; that this age limit be reduced as in the case of captains until it reaches 50; that no candidate be admitted to the Naval Academy whose age exceeds 17 on the 1st day of October of the year his class enters; also, as a contributory measure of relief, that officers whose service is restricted by law to shore duty only be made extra numbers in the grades of commander and captain.

I am impressed with the importance of this recommendation. The interests of the service are paramount in such a matter, and I believe that action should be taken to place younger men in positions of command as soon as a way can be found to do so that does not involve injustice or impose unnecessary hardship upon officers whose long and worthy service entitles them to consideration.

MEDALS OF HONOR.

Under the provisions of the act of July 12, 1862, as amended by the act of March 3, 1863 (12 Stats., pp. 623, 624, and 751), medals of honor are awarded to officers, noncommissioned officers, and privates in the Army. By section 1407 of the Revised Statutes and the act of March 3, 1901 (31 Stats., p. 1099), it is provided that enlisted

men of the Navy may be given medals for gallantry. There is, however, no general statute authorizing the bestowal of medals of honor on officers of the Navy. In a communication on the subject addressed to the Department, the Admiral of the Navy refers to this omission as "an injustice of long standing." He says:

> I can see no reason for such discrimination against the officers of the Navy, and can think of no argument that can be urged against putting naval officers in this regard on a par with those in the sister service. The medal of honor, being granted only for special acts of valor, is regarded as a distinction only equaled by the Victoria Cross in England or the Iron Cross in Germany, and why should our officers be debarred from achieving such a distiction? Our naval officers have invariably and nobly done their duty under all circumstances, in all wars, and without the prospect of any such reward; but there seems to be no effective reason why they should be prohibited from receiving what is granted their brother officers in the Army.
>
> The change of existing laws to accomplish such an end would require little legislation, need not be retroactive, and would cost the Treasury nothing. It would be a measure of simple justice to the officers of the Navy, and as such I take the liberty of commending the question to your earnest consideration.

Appreciating the appropriateness and the justice of the suggestions made by the Admiral with respect to this matter, the Department earnestly recommends that officers of the Navy be placed on the same footing as officers of the Army with respect to recognition for conspicuously meritorious conduct, and suggests that accordingly medals of honor of two classes be authorized, one to be given for acts of gallantry performed in time of peace and the other for acts of special heroism in time of war.

NAVAL ENGINEERING.

By the act of March 3, 1899, known as the "personnel act," the officers constituting the Engineer Corps of the Navy were transferred to the line. This measure was passed after careful consideration by a board of which, while Assistant Secretary of the Navy, you were chairman, and its purpose was to cure certain evils that had grown out of the fact that one corps of officers had charge of the motive power of a ship while another directed and controlled her as a fighting machine.

It was set forth in this report that, as in the course of the growth of modern navies prior to the advent of steam the fighting men on board war ships had found it necessary to become expert sailors, masters of the art and practice of seamanship, as well as adepts in gunnery, the use of small arms and naval tactics, and became thus equally efficient in handling and in fighting their ships and able to do whatever had to be done with or about the vessels, so it was thought that, the motive power having changed from sails to steam, the officers and men who had learned the use of the old motive power should likewise

master the new. In other words it was considered that, as modern fighting ships are now propelled by machinery, and not by sails, and as engines of some sort are found in almost every part of them, the officers who control such ships must become expert engineers, just as in the past their predecessors became expert sailors.

In thus seeking to fit its naval organization to changed conditions the United States is in advance of other maritime powers, although the example of this country has to some extent been followed by Great Britain. A change of this kind can not be brought about in a day, and it is yet too early to form intelligent judgment as to the effect of this union of the line and the engineer corps of the Navy. It may be said, however, that while doubts are expressed in some quarters, the weight of opinion among officers of rank and experience in the service generally is that the consolidation of the engineer corps with the line is working well.

WARRANT MACHINISTS.

The grade of warrant machinist was established a little more than five years ago. The officers filling this grade have by hard work and good service earned their right to be placed upon the same footing as other warrant officers. It is accordingly recommended that provision be made for their "promotion to chief rank," that is, to rank with but after ensigns, as is now provided by existing law in the case of other warrant officers. It is suggested by the Chief of the Bureau of Steam Engineering that if this recommendation is adopted certain appropriate changes in the designation of warrant machinists should be made, his recommendation being that upon appointment they be called "acting machinists," after warranting "machinists," after promotion "chief machinists," and that the designations of certain ratings of petty officers be correspondingly changed so as to avoid confusion.

CITIZENSHIP OF THE PERSONNEL.

All commissioned officers of the Navy are citizens of the United States. Of the total enlisted force, numbering 29,321, 80 per cent are native born, 11 per cent naturalized, giving, therefore, 91 per cent as citizens of the United States. Recruiting, now carried on extensively in the States of the Middle West, brings to the Navy an excellent class of young men. No better material can be found anywhere. If a taste for the service can be developed among this class of our citizens to such a degree that the enlisted personnel can be largely recruited from this source, great advantage to the Navy will result. To this end it must be the united aim of all who have to do with naval administration to see that the enlisted personnel is dealt with justly.

SAVINGS BY ENLISTED MEN.

By act of February 9, 1899, Congress authorized the receipt and care of the savings of enlisted men in the Navy when deposited in sums of not less than $5 with the paymaster upon whose books their accounts are borne, money so deposited not to be subject to forfeiture by sentence of court-martial but to be forfeited by desertion; not to be paid until final payment on discharge; to be paid to heirs or representatives of a deceased sailor; to be exempt from liability for the sailor's debts; and final repayment to be guaranteed by the Government, with interest on all sums so deposited for the period of six months or longer, at the rate of 4 per cent per annum.

Under this excellent statutory provision the deposits of savings by seamen during the last year amounted to $575,094.98; the repayments were $607,868.95, leaving a total amount to the credit of the fund on June 30, 1904, of $860,020.28. The interest at 4 per cent per annum upon repayments amounted to $39,294.59.

It thus apppears that enlisted men of the Navy have deposited their savings with the Government in sums aggregating more than half a million dollars, upon which they are paid interest. This is a highly creditable showing.

NAVAL Y. M. C. A.

Good results have followed the gifts of patriotic and public-spirited men and women by which there have been established at several of the navy yards and stations Young Men's Christian Association buildings, providing practically club houses or homes where persons in the Navy may meet socially and find, in wholesome surroundings, healthful and rational recreation. The thanks of the Navy, and of all who have its best interests at heart, are due to those who have with such wise and discriminating philanthropy founded and promoted this good work.

MARKSMANSHIP.

In this era of instruction it is important that activities continue throughout all branches of the service. Vessels and squadrons should be kept moving, and officers and men should be continuously under training in the methods of caring for, maintaining, and developing their efficiency, whether they are operating singly or in fleet or squadron, and ample practice should be given in the use not only of small arms, but of guns of all calibers.

With a view to further improvement in marksmanship, the system of rewards for accuracy and rapidity of fire will be continued, and, as far as may be practicable, extended.

It is gratifying to note that an increase in efficiency is reported as a result of the year's practice, especially in the case of the heavier guns, namely, those from 8 to 13 inches in caliber installed in turrets.

Target practice is expensive, but no money is spent with better results. The object of the Navy in time of war is destruction of the enemy's fleet, and effective gunnery is of paramount importance.

VESSELS ADDED TO AND STRICKEN FROM THE NAVY LIST.

The additions to the effective force of the Navy by the completion of vessels building under contract and at navy-yards consist of the battle ship *Missouri*, the protected sheathed cruisers *Denver*, *Des Moines*, *Tacoma*, and *Cleveland*, one torpedo boat, and two tugboats. The battle ship *Ohio* was brought to a state near completion before the end of the fiscal year and will be ready to go into commission at an early date.

The single-turreted monitors *Lehigh*, *Nahant*, *Montauk*, and *Jason* were dropped from the Navy Register during the year and sold. The single-turreted monitor *Canonicus* was stricken from the Navy Register January 9, 1904, but no bid for this vessel was received.

Vessels launched between December 1, 1903, and November 23, 1904.

Name.	Type.	Contractor.	Date of launching.
Charleston	Protected cruiser	Newport News Ship Building and Dry Dock Co.	Jan. 23, 1904
Virginia	Battle ship	do	Apr. 5, 1904
California	Armored cruiser	Union Iron Works	Apr. 28, 1904
Rhode Island	Battle ship	Fore River Steam and Engineering Co.	May 17, 1904
South Dakota	Armored cruiser	Union Iron Works	July 21, 1904
Dubuque	Gunboat	Gas E. & P. Co. & C. L. S. & Co.	Aug. 15, 1904
Cumberland	Training ship	Navy-yard, Boston	Aug. 17, 1904
Louisiana	Battle ship	Newport News Ship Building and Dry Dock Co.	Aug. 27, 1904
Milwaukee	Protected cruiser	Union Iron works	Sept. 10, 1904
Connecticut	Battle ship	Navy-yard, New York	Sept. 29, 1904
Nebraska	do	Moran Bros. Co.	Oct. 7, 1904
Intrepid	Training ship	Navy-yard, Mare Island	Oct. 8, 1904
Georgia	Battle ship	Bath Iron Works	Oct. 11, 1904
Paducah	Gunboat	Gas E. & P. Co. & C. L. S. & Co.	Do.
Boxer	Training brigantine	Navy-yard, Portsmouth, N. H.	Do.

SHIP CONSTRUCTION AT NAVY-YARDS.

The Chief Constructor reports that the progress of work on vessels building at navy-yards is satisfactory. The rate of progress on the *Connecticut* is especially gratifying, being greater than that of any battle ship heretofore built for the Government, with the single exception of the *Louisiana*, now under construction at the works of the Newport News Shipbuilding and Dry Dock Company.

It is the opinion of the Chief Constructor that ships built by the Government at navy-yards will cost more money than if built at private yards by contract. A different question is whether they will prove better than contract ships.

Other considerations must be taken into account also in deciding the matter of Government construction of vessels of the larger class.

Doubtless the fact that there is at command at navy-yards the necessary plant and a force of men trained in such work will have a tendency to keep down prices, and the equipment of the Government yards for building warships may have its advantage in time of national emergency.

I concur, however, with the Chief Constructor in the view that the repairing and overhauling of naval vessels must at all times remain the important work of the navy-yards, and that there should be no change in the policy of building public ships, as a general rule, by contract at private establishments.

NAVAL GUN FACTORIES.

The maintenance of a public naval gun factory in a state of such efficiency as to be capable of turning out guns of all calibers required for the armament of naval vessels is undoubtedly desirable. The existence of such an establishment tends to keep prices down and to prevent the formation of monopolies for the supply of ship's armaments. I do not, however, agree with certain of the ordnance experts in the opinion that the Navy should, under ordinary circumstances, undertake to manufacture all, or even the greater part, of the guns and ammunition required for the service. On the contrary, I think it is better to adhere, in the matter of armament, to the general policy adopted with respect to ships and armor. At more than one navy-yard it is possible to build war ships, and the Government is actually building them at some of the yards; but this is the exception. Most of the new ships are under construction at private establishments, and all armor is furnished by private concerns. It would seem wise to follow the same general policy with respect to armament.

I am led to this conclusion by a number of considerations. The Government should not unnecessarily enter the industrial field. The development in time of peace of large private establishments, with extensive plants and a force of skilled artisans capable of building ships of the first class, making armor of the best quality in all weights, and constructing guns of every kind and supplying fixed ammunition therefor is desirable, inasmuch as the existence of such establishments may be of important service in time of war.

Furthermore it is not to be supposed that when such plants shall have been successfully established they will confine themselves exclusively to the making of ordnance for the United States. They will doubtless find markets elsewhere, and will do other work in kindred lines, thus adding to the general wealth and prosperity. Again, large numbers of skilled American workmen can not be long engaged in such a field without developing improvements in guns and their appurtenances, and in machinery for their manufacture, which will prove

of national advantage. For these, and other reasons, I am of the opinion that it is better that the nation's chief instruments of warfare, offensive and defensive, should be made by its people rather than by itself.

TURBINE PROPULSION.

It is believed by the Chief of the Bureau of Steam Engineering that recent progress in the development of the turbine and its present successful application for propelling purposes warrant the installation of that interesting type of motive power in two of the new scout cruisers. This conclusion has been reached after investigation by representatives of the Bureau into the working of turbine installations upon the yachts *Revolution*, *Lorena*, and *Tarantula*, and the passenger steamer *Turbinia*, and the inspection of turbines at their places of manufacture as well as in plants specially erected for experimental purposes. The results of these inspections are reported as uniformly satisfactory. With the prospect of the introduction of turbine engines in the propulsion of the lighter naval vessels in the near future, the question of appropriate modification in the designs of screw propellers, so as to fit them for running at higher speeds than have been used heretofore, arises, and to the solution of this question the Bureau is giving attention.

COAL.

During the year 498,576 tons of coal were used on board ships of the Navy. Of this quantity 206,348 tons were sent to naval coal depots, the greater portion being shipped to the Asiatic Station. There were transported in chartered vessels 131,140 tons, while 75,208 tons were shipped in naval colliers. Arrangements for the supply of ships of the Navy with coal through American agents in 76 foreign ports have been effected.

The providing of facilities for handling and storing coal in the island of Guam and in Tutuila, Samoa, is recommended. The Bureau of Equipment has caused a survey to be made for the construction of an extensive coal plant at Olongapo, P. I., and the necessary funds for the purpose being available, the work will be carried forward without delay. No coal depots for naval use have been established in foreign waters during the year.

LIQUID FUEL.

As the United States produces 48 per cent of the world's output of petroleum, and as the Texas, California, and other oil fields are near to maritime ports and possible scenes of naval operations, the question of utilizing liquid fuel on ships of war, which has for some years been

engaging the attention of naval experts abroad, is one of peculiar interest to this country.

Oil is used instead of coal in manufactories and power plants on the Pacific coast. Locomotives on California railways are using oil as a fuel in lieu of coal with satisfactory results, particularly from the standpoint of economy, a saving of over 50 per cent in fuel cost alone in some cases having been attained. Ocean steamers are plying regularly between Honolulu and San Francisco with liquid fuel installations, which appear to be safe, satisfactory, and economical. Two ocean freighters have made voyages from New York to San Francisco using coal, and returning from San Francisco to New York using oil as fuel. With oil better time was made; the cost was less; the trip was made with 6 men only instead of 15 in the firerooms; several hundred tons more space was available for cargo, and there was no increase in insurance rates. The total saving to the owners from the use of oil was not less than $500 per day.

All this does not prove that petroleum can be advantageously substituted for coal as a fuel supply for naval vessels, but it is sufficient to warrant giving it a trial in some of them.

Among the advantages offered by liquid fuel are the reduction of the complement of men in the fireroom, extension of the steaming radius of vessels, attainment of maximum speed at short notice, the facility with which the boilers may be forced to extreme duty in cases of emergency, rapidity in meeting a varying load on the boilers, absence of smoke under light normal working conditions, economy of space reserved for carrying fuel, and finally the fact that oil tanks may be readily and quickly replenished. It appears to have been demonstrated by commercial experience that steam can be raised by oil fuel in one-third the time required by a coal furnace, and that the time requisite to fill oil tanks may be reduced to a fraction of that needed for filling bunkers with coal.

On the other hand, the difficulties of using a liquid-fuel plant upon vessels of war, particularly battle ships and cruisers, are many and obvious.

In pursuance of an act of Congress making appropriation for the purpose, a board of officers has been engaged for more than two years in investigating the feasibility of the use of liquid fuel on naval vessels, and during twelve months of this period the torpedo boat *Rodgers*, with its personnel, was placed at the disposal of the board. The valuable data obtained by the researches thus conducted will be found fully set forth in a report made by the board to the Chief of the Bureau of Steam Engineering, and just published.

In this report the board expresses the opinion that "at least one vessel cruising on the Pacific coast should be so arranged as to burn

liquid oil exclusively;" that "there should be no attempt to use oil as an auxiliary fuel in this coast-defense vessel," but that reliance should be placed "exclusively upon the oil product;" that in case an oil depot were established at Honolulu, an oil-fuel installation should be made in one of the coast-defense monitors "whereby the advantages and disadvantages of oil as a fuel for naval purposes could be absolutely ascertained." The board further states that "the information and data already secured warrants the immediate installation of oil-fuel appliances on several torpedo boats and torpedo-boat destroyers to test the adaptability of the water-tube boilers of bent-tube type for using this fuel."

My own view with respect to the matter is that the use of oil as a fuel on board naval vessels is a question that can not by any means be regarded as settled adversely.

TIME SIGNALS.

Appreciable progress in the accuracy of the daily noon-time signals sent out by the Naval Observatory has been made. By these signals time balls are dropped in this city, at Boston, Newport, Woods Hole, New York, Philadelphia, Baltimore, Fortress Monroe, Savannah, New Orleans, and Habana, Cuba. Offices of the telegraph and telephone companies throughout the United States receive the same signal, and all railways east of the Rocky Mountains are thus furnished with correct time.

The whole operation is automatic, except the preliminary opening and closing of circuits. Five minutes before 12 o'clock, Washington time, business is suspended on the wires of the telegraph companies, and electrical connection with the standard Observatory clock is made. Each second as recorded by the Observatory clock is automatically telegraphed, and can be heard upon sounders in telegraph and telephone stations from Maine to Texas. The final noon signal is marked by a contact one second long, and this drops the time balls and corrects the clocks automatically.

The transmitting clock that sends out the signals is corrected very accurately, shortly before noon, from the mean of three standard clocks, and on every clear night these clocks are themselves verified by observations of the meridian transit of stars. The average noon-signal error for the entire year was fourteen-hundredths of a second, but during the last six months it has been reduced to about six-hundredths of a second. The error is caused in part by the lack of absolute mechanical perfection in the clocks; by changes in temperature, the effect of which can not be wholly eliminated, but chiefly by variations in the density of the atmosphere.

It is proposed to extend the noon-time signals by means of wireless

telegraphy so as to distribute them over water as well as land, in order that ships at sea in proximity to our coasts may receive the correct time from the standard Observatory clock. By this means navigating officers whose vessels are anywhere within the radius of communication of a coast wireless-telegraph station, may verify and correct their ship's time and thus avoid all dangers due to variation of chronometers at sea.

Aside from their ordinary business and commercial utilities, the Observatory noon signals are of service in connection with the telegraphic determination of longitude. It is occasionally discovered that lines of seacoast, islands, reefs, and rocks are not in fact in the positions in which they are marked on the charts. Sometimes they are several miles out of the way. Wherever a vessel carrying a wireless equipment can receive time signals, longitude can be determined with accuracy and the maps and charts in use can be verified and corrected accordingly.

WIRELESS TELEGRAPHY.

The work of installing wireless-telegraph stations on shore and on ships has continued during the year. By permanent stations established at Cape Elizabeth, Me.; Portsmouth, N. H.; Cape Ann, Boston, and Cape Cod, Mass.; by lightships on Nantucket Shoal; by stations at Montauk Point, L. I.; the navy-yard, New York; the Highlands of Navesink, N. J.; Annapolis, Md.; Washington, D. C.; Norfolk and Cape Henry, Va., and Key West, Dry Tortugas, and Pensacola, Fla., a chain of communication between our Atlantic and Gulf coasts and vessels at sea will be established.

The stations at Pensacola and Key West are to be equipped with long-distance apparatus, and the contract for their installment provides for a maximum range of communication of about 1,000 miles, so as to include Porto Rico, Guantanamo Bay, and the Panama Canal Zone. Stations have also been established at Mare Island and Yerba Buena Island, Cal., and at the Farallon Islands, off the Golden Gate, Cal.; also at Honolulu and Guam, and at Cavite and Cabras Island, P. I.

In view of its uses in the national defense, wireless telegraphy should remain under public control; but this power should be so exercised as not to interfere more than is necessary with private interests.

TOTAL ECLIPSE OF 1905.

The chief of the Bureau of Equipment recommends that this Government take steps toward participating in the observation of the total eclipse of the sun to occur in August, 1905. The line of totality does not touch this continent at any point convenient for observation, but the Bureau suggests that an observing party be sent to the track

of the eclipse in northern Spain, where at the time of its occurrence it is reasonable to expect fair weather, and estimates that an appropriation of $6,000 would be sufficient for this purpose.

DERELICTS.

It occasionally happens that a steam or sailing vessel foundering at sea remains afloat after abandonment by officers and crew, drifting in irregular paths for weeks and sometimes for months, driven here and there by winds and currents. As such floating wrecks carry no lights and sound no fog signals, they are a source of danger to navigation, and it is a part of the duty of the Hydrographic Office to plot and publish, from time to time, for the use of navigators, the erratic tracks taken by, and the location of, such derelicts as are reported.

During the past ten years more than two thousand floating wrecks were observed in the North Atlantic alone, and forty-two of them were struck by merchant vessels. To sink, blow up, or otherwise render harmless these dangers to navigation is a matter involving labor and expense, and one that can not well be undertaken by private shipowners. While no concerted patrol or systematic effort to destroy wrecks has been undertaken, something in this direction is done by the navies of the maritime nations generally, and in this work our own Navy has been and is active. Eighteen derelicts, sighted in the neighborhood of our coasts, were reported during the year. Of these, eleven were removed or rendered harmless by naval vessels. The remaining seven could not be found.

THE MEDICAL CORPS.

The Medical Corps is the only branch of the service in which vacancies at the foot of the list have long existed and still remain unfilled. Of the 97 applicants who sought admission to the corps during the past year 23 only were found to be qualified for appointment and were commissioned as assistant surgeons. The requirements for graduation at the leading medical colleges of the United States include four years' study, and in addition, in order to enter examinations for admission to the Medical Corps of the Navy, candidates must have had clinical and practical training involving at least one year of professional work.

Those who successfully pass the examinations after such preparation are well equipped to enter upon the practice of medicine under ordinary circumstances, but they have, as a rule, no knowledge of the special problems that they may be called upon to meet as assistant surgeons in dealing with conditions peculiar to the Navy. They have not specially studied the methods of combating tropical and subtropical diseases, and they are, in general, without acquaintance with the

laws, regulations, customs, and traditions of the service, and the obligations and duties immediately devolving upon them when they take place and station as component parts of the personnel of the Navy.

Some training in these lines, so essential to success in a naval career, is now given in a thoughtfully outlined course of six months' duration at the naval medical school in this city, established by the present Surgeon-General, and just entering upon its third year. From this institution there were graduated last March 30 officers who have since entered active service. Twenty-four more have been enrolled and are under instruction.

In addition to their ordinary duties in the care of the sick of the service, ashore and afloat, the Medical Corps during the past year has performed in naval hospitals a total of 753 important operations, and in several instances has been called upon to combat threatened epidemics. The manner in which the latter work was done shows that the best service of the profession in military, as in civil, surroundings is rendered by the medical advisor in his capacity as a sanitarian. Diseases wholly excluded from the service during the past year were bubonic plague, cholera, and yellow fever. Among those incidentally occurring, or isolated and controlled, were smallpox, cerebro-spinal meningitis, and diphtheria. Eleven cases of the latter disease having developed among the apprentices on board the training ships *Mohican* and *Adams*, antitoxin was used and all recovered.

THE PAY CORPS.

Among the recommendations of the Paymaster-General to which attention is particularly invited are the following:

(1) The establishment of a probationary period of service for assistant paymasters of the Navy. Under the present method of recruiting the personnel of the Pay Corps young officers are immediately assigned to permanent service without previous technical education or training and without having been subjected to trial under service conditions in the duties they are expected to perform. One year's probationary service as acting assistant paymaster is recommended, to be followed by examinations as to physical, mental, moral, and professional qualification, before permanent appointment.

(2) Warranting paymasters' clerks and giving them the pay and allowances of warrant officers of corresponding length of service, with privilege of retirement upon attaining the age of 62 years after thirty years' service, is suggested.

(3) The immediate increase of the naval-supply fund to $5,000,000. This fund is not an appropriation for direct expenditure, but a fund advanced as working capital, being reimbursed from other appropriations as stock is withdrawn for use.

(4) The development and extension of the system of supply ships inaugurated in the cases of the *Culgoa* and *Glacier*. During the past year large quantities of fresh meats and vegetables were handled by these vessels, the losses being inconsiderable.

(5) Recommendations respecting the form of appropriations for transportation, telegraphing, and advance payments for services where commercial usage so requires are made.

DRY DOCKS.

The Chief of the Bureau of Yards and Docks reports that the new dry docks at Portsmouth and Boston are practically completed and will in a short time be officially tested. These docks are of the best construction and will serve the Government for many years without deterioration. The Portsmouth dock is founded in solid rock and should last indefinitely. The dock at League Island is to be completed by October, 1905; that at New York has just been contracted for, the contract providing that the work shall be done within forty-two calendar months. At Norfolk and at Charleston dock construction is progressing well, but at Mare Island, Cal., the contract originally made was annulled because of unsatisfactory progress. Steps were immediately taken to readvertise for proposals for completing this dock on the contractor's account, and it is expected that work will soon again be under way there.

Progress on the steel floating dock authorized for the naval station, Cavite, P. I., has been satisfactory, and it is believed that this dock will be ready for trial within the contract time, which expires next spring.

CORPS OF NAVAL CONSTRUCTORS.

The Department desires to invite attention to that portion of the chief constructor's report which relates to the personnel of the corps of naval constructors. As noted in a former report of one of my predecessors, this corps, since 1879, has been recruited from graduates of the Naval Academy, and at the present time the active list is entirely composed of such graduates. The system inaugurated in 1879 has proved to be of the greatest advantage to the naval service, and the method of recruiting the construction corps then begun should be continued.

During the past few years, however, the great inducements offered in civil life have been such as to cause the resignation of a considerable percentage of the officers of the construction corps, thus making it still more difficult for the remaining personnel to carry out the duties devolving upon them. However embarrassing these resignations may be at the present time, the Department is of the opinion that the ulti-

mate benefit to national industries will largely compensate for the present loss to the Navy, since officers so trained will carry with them into civil life the traditions of the naval service, which will exercise an important influence upon their subsequent work for the Navy and mercantile marine.

Despite the great inducements in civil life which have caused such extensive resignations from the construction corps, the average pay of officers who have resigned being reported as from twice to three times that received in the naval service, the chief constructor does not recommend a general increase of pay for naval constructors, in view of the practical difficulties attending a change in the pay of any one corps of the naval service until the whole subject of naval pay is given careful consideration.

ASSISTANTS TO BUREAUS.

Under provisions of existing law naval officers are detailed for duty as assistants to the chiefs of the bureaus of Navigation, Ordnance, Supplies and Accounts, and Medicine and Surgery, with authority to act as chief of bureau in the absence of the officer regularly commissioned as such. The heads of the other bureaus now earnestly ask that in their cases also assistants be allowed.

In view of the rapid growth, during recent years, of naval work in all its branches, I am of opinion that such assistants are needed, and recommend, therefore, that the provisions of law on the subject be so far extended as to allow an assistant, specifically designated as such, in each of the bureaus.

THE MARINE CORPS.

The force of marines on brigade duty in the Philippines now consists of 43 officers and 1,297 enlisted men. In the Canal Zone at Panama there are 10 officers and 440 enlisted men. Detachments of marines are also stationed in Porto Rico, Guantanamo, Cuba, Alaska, Hawaii, Guam, the Midway Islands, and elsewhere beyond the continental limits of the United States.

For such duty, for service at navy-yards and on board naval vessels in commission, the present aggregate force of the corps, 278 officers and 7,532 enlisted men, is insufficient. Estimates have been submitted for an increase, rendered necessary to enable the corps to meet the present demands of the service. This increase is recommended, as it appears from official reports that "every post in the United States is short of the strength required adequately to protect public property thereat;" that constant and urgent requests are received from the commandants of the several stations for an increase of the garrison of marines; and that it is with the utmost difficulty that marine guards

are furnished for ships now in commission, while it will be wholly impracticable with the present force to so equip vessels to be commissioned in the near future.

THE PANAMA BRIGADE.

With respect to conditions found in the Canal Zone, the brigadier-general commandant, who was for a time personally in command of the brigade on duty there, reports as follows:

During the service of the brigade in Panama, by dint of stringent measures in the direction of sanitary precautions, the health of the command was remarkably good. The compulsory employment of mosquito nets prevented, to a large extent, inoculation by mosquitoes. The proportionate number of cases of fever was remarkably small, having in view the records of previous commands in Panama, and the cases that did exist responded quickly to treatment. There were no deaths in the command. The fact that much of the fever was due to mosquito bites was reasonably clearly demonstrated as the result of an expedition to Real, a point situated near the head of the San Miguel Gulf, on the Pacific side, on which occasion it was impracticable to employ nets, and the proportionate amount of sickness in the command was correspondingly great.

It is interesting to note that in this considerable detachment of officers and men encamped on the Isthmus of Panama since January last, the total percentage of sickness reported was but 4.05, of which 3.10 was chargeable to malaria. Not a single case of yellow fever appeared. No death occurred during the period covered by the reports. The Surgeon-General states that by the middle of April there were evidences that the members of this force, then reduced from 635 to about 450 officers and men, were becoming acclimatized. To the medical officers accompanying the expedition credit is due for this suggestive and important foreshowing of the possibilities of sanitation on the Isthmus.

LEGISLATION RECOMMENDED BY THE JUDGE-ADVOCATE-GENERAL.

Attention is invited to the recommendations made by the Judge-Advocate-General that legislation be asked upon the following subjects:

(1) *Attendance of civilian witnesses before naval courts.*—The relations of the Navy with the affairs of civil life is growing closer year by year, and cases in which courts-martial can not arrive at the truth in matters pending before them without the testimony of civilian witnesses are increasing in number. Such witnesses may, under the law as it stands, decline to respect the subpœna of a naval court. The draft of a measure designed to remedy these conditions, without conferring upon courts-martial any direct jurisdiction over civilian witnesses, is pending before Congress.

(2) *Depositions.*—The use of depositions before army courts-martial is authorized by law. It is believed that the administration of justice would be promoted by granting the like privilege to naval courts.

(3) *Examining and retiring boards.*—It is understood that the system of army and marine examining boards now existing was adopted, with improvements, after a study of the advantages and defects of the naval system. It would seem that the Navy should also be given the benefit of such experience, which has shown that the work is capable of simplification by the substitution of one board for two in the manner provided by bills pending before the present Congress.

(4) Provision for the convening of general courts-martial by commandants of isolated naval stations such as Guam and Tutuila seems desirable. Such stations did not exist when the present law (article 38 of the Articles for the Government of the Navy) was enacted, and are not therein provided for.

(5) The number of inventions made and patents secured by persons in the Navy is considerable. Statutory provision should be made for the acquirement by the United States upon such equitable terms as will stimulate, not repress, invention in the lines of trained naval research, while at the same time guarding the interests of the Government.

(6) Return to the public domain of certain live-oak timber lands reserved for naval purposes in the early part of the last century and no longer needed is suggested. There are several of these reservations; they all lie within the State of Louisiana, and their total area is about 3,338 acres.

(7) Special attention is asked to the recommendation of the Judge-Advocate-General respecting the establishment of "deck" or "one-officer" courts. It is believed that courts consisting of a single officer can deal efficiently and satisfactorily with the majority of misdemeanors and lesser offenses of the police-court class, thus relieving summary and general courts of a considerable burden without disturbing their jurisdiction over graver offenses. Here, again, advantage is taken of the experience of the Army in the organization, since the act of June 18, 1898 (30 Stat. L., p. 485), of courts consisting of a single officer. These courts have given such satisfactory results that they have, it is understood, practically superseded the older and more cumbrous forms of procedure.

(8) Section 1355 of the Revised Statutes, relating to the Army, provides that "every prisoner upon being discharged from prison shall be furnished with decent clothing." By act of March 3, 1875, authority is given to the warden of the prison where any person "convicted under the laws of the United States on indictment" is confined for more than six months, to furnish such person, on discharge, with one plain suit of clothes and $5 in money. No such specific authority is

conferred by law in the case of discharged naval prisoners, and while the Department, under liberal decisions of the Comptroller, is able to supply discharged prisoners with suitable clothing when they are destitute thereof, it is wholly without authority to furnish them money when, as is often the case, they have nothing due them on the books. It not infrequently happens, therefore, that men are turned out of prison wearing service uniform, but without money, exposed to temptation, vagrancy, and crime, and liable to become a tax upon the community and a reproach to the Service. Appropriate legislation upon this matter is recommended.

(9) It was found in the past year that there was no statute under which a beneficiary of a naval home who had become insane and who was formerly, but not at the time, in the Navy, could be admitted to the Government Hospital for the Insane for treatment. It is suggested that Congress be asked to authorize admission to the Government hospital in cases of this character.

GUAM.

By the President's order of December 23, 1898, the island of Guam was placed under the control of the Navy Department, and the Secretary of the Navy was instructed to "take such steps as may be necessary to establish the authority of the United States and give it the necessary protection and government."

Since the issuance of this order the affairs of the island have been administered by a naval governor. Funds to meet the insular expenses being necessary, the President, February 1, 1900, directed that a tariff of duties and taxes be levied, collected, and the proceeds expended for administrative purposes in the island; but the revenues thus derived are meager and uncertain. Officers of the Navy who have been on duty in Guam report that its inhabitants are law-abiding, orderly, and worthy, and urge that the National Government should have done more for this isolated island than it has done. The chief matters of complaint are:

1. That formerly the Spanish Government defrayed 80 per cent of the expenses of administration, while since the change in sovereignty the people of the island have borne the entire burden.

2. That much more money has to be raised by local taxation now than during the Spanish régime.

3. That the food products of the island are insufficient, and that food must be imported and duties paid thereupon.

4. That while the Spanish Government subsidized a bimonthly line of steamers to and from Manila, fixed a reasonable schedule of freight charges, and thus made accessible a foreign market for copra, coffee, and cocoa, at present the only means of shipment is by occasional Japanese schooners, which have a monopoly and impose high rates.

5. That the only steamers touching at Guam are the army and navy transports, which carry no merchandise and practically no passengers.

6. That no satisfactory opportunity is given the population to learn the English language, as the provision made for schools is insufficient, there being 2,300 children of school age and but one imperfectly equipped school building.

7. That there is no legislative body in the island.

8. That the island is without a satisfactory judicial system, as the right of appeal existing under Spanish administration in important cases, civil and criminal, first to courts in Manila and ultimately to higher authority at Madrid, is now cut off, and there is no appeal to any judicial tribunal in the United States.

It is believed that Congress should provide a form of government for the island of Guam without delay, and give to its people that sense of security in property and business affairs which can come only from permanent laws and a form of government in harmony with that of the country to which the island belongs.

The chief products of Guam, and those upon which the future prosperity of its people must depend, are agricultural, but the resources of the island, really considerable, remain undeveloped. As the result of conference with the Secretary of Agriculture a special agent of that Department will be dispatched to Guam with a view to the intelligent treatment of the varied agricultural products of the island and the instruction of its people in modern methods of planting and cultivation.

THE NAVAL EXHIBIT AT ST. LOUIS.

The exhibit of the Navy Department was allotted, approximately, 15,500 square feet of floor space in the Government building at the Louisiana Purchase Exposition. Within this limitation the Department's representative on the board of management arranged the features of this exhibit in a manner creditable to the Department and to the exposition.

Assigned a prominent location in the building erected by the Government for the use of its several departments, the exhibits of the Navy and the Marine Corps were grouped around a full-size model of the forward part of a battle ship above the water line, extending from the bow to the waist of the vessel, and including the forward turret, in which models of two 10-inch guns were mounted. Rapid-fire guns of various calibers, torpedo firing tubes with torpedoes, electrical battle lanterns, magazine lanterns, ammunition hoists for the distribution of ammunition to the batteries, sounding machines, patent logs, small boats, and other items of apparel of a battle ship were suitably disposed about the decks.

In addition to this full-size exhibit, which occupied the greater portion of the space allotted, there were displayed, under glass, small metal models of various types of naval vessels, modern and historical; models of the Naval Academy, of the proposed naval arch in New York, of the Caribbean Sea, and of an ordinary dry dock and a floating dry dock, each containing a miniature battle ship.

By means of a mutoscope in the main exhibit, and by a moving-picture apparatus operated in a hall partitioned off from the rest of the space and capable of seating 200 spectators, scenes from life in the Navy and incidents in naval maneuvers were exhibited.

DEATH OF ADMIRAL TAYLOR.

By the sudden death of Rear-Admiral Henry Clay Taylor, chief of the Bureau of Navigation, the Navy suffered the loss of an accomplished officer, and the present head of the Department, then just entering upon his duties, was deprived of an experienced and sagacious adviser whose intimate acquaintance with and accurate knowledge of the needs of the service would have given his counsel high value. This sense of personal loss is augmented by the fact that during his riper years, as president of the War College, as member of the General Board, and as chief of the Bureau of Navigation, Rear-Admiral Taylor had given earnest consideration to the problems at this moment occupying the attention of all interested in the welfare of the Navy.

PAUL MORTON,
Secretary of the Navy.

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PAPERS

ACCOMPANYING

THE REPORT OF THE SECRETARY OF THE NAVY.

REPORT OF CHIEF OF BUREAU OF YARDS AND DOCKS.

DEPARTMENT OF THE NAVY,
BUREAU OF YARDS AND DOCKS,
Washington, D. C., October 1, 1904.

In obedience to the instructions contained in the Department's letter of July 5, 1904, I have the honor to submit a report of the operations of the Bureau of Yards and Docks for the fiscal year ended June 30, 1904, together with estimates for the fiscal year ending June 30, 1906.

The expenditures during the year from appropriations under the cognizance of the Bureau aggregated $7,557,688.61, of which the sum of $5,846,699.52 was for works of improvement for which specific appropriations were made by Congress. The remainder, $1,710,989.09, was applied to the maintenance and repair of the navy-yards and stations, under the cognizance of the Bureau, for civil establishment, contingencies, etc., as follows:

The repairs and preservation of the yards and stations, covering the outlays upon the real estate and improvements, cost $608,717.51; their maintenance, covering outlays for and upon personal property, cost $802,906.84; the civil establishment cost $103,538.60, and contingent and other expenditures amounted to $195,826.14.

Various balances of appropriations remaining unexpended, and aggregating $8,035.33, were turned into the surplus fund of the Treasury.

During the year 80 contracts were made by the Bureau, involving obligations amounting to $3,478,169.26. The efficiency of the navy-yards and stations has been materially increased by the improvements added during the year, although much yet remains to be done to place them in condition to expeditiously and economically handle the work devolving upon them. As the number and size of the navy-yards and stations increase, it becomes necessary to make larger allotments for their maintenance and for the repair of existing structures.

The new dry docks at Portsmouth and Boston are practically complete at this date and will shortly be given the official test provided for in the contracts. These docks are of the best construction and will serve the Government for a great many years without deterioration. The former dock is founded in solid rock and should endure for all time. The dock at League Island is progressing satisfactorily and should be completed by October, 1905. The dock at New York is

about to be contracted for and is to be completed within forty-two calendar months. At Norfolk the progress of work has been fair, and the Bureau is assured by the contractors that every effort is being and will be made to carry the work forward to completion within the contract time, August 17, 1906. The conditions at Charleston, S. C., are similar to those at Norfolk. In both cases the Bureau is keeping the contractors reminded of their obligations and urging them to make every effort to hasten the completion of these docks. At Mare Island the contract originally made for the new dock was annulled on April 28, 1904, because of unsatisfactory progress. Steps were immediately taken to readvertise for proposals for completing the work on the contractor's account, and bids will be opened on the 29th instant. The Bureau hopes to be able to have this work again under contract by the middle of November. The contract for completing the work will allow twenty-four calendar months for the purpose. The progress of work on the steel floating dock, authorized for the naval station, Cavite, P. I., has been satisfactory, and there is every indication that the dock will be ready for test well within the contract time, which expires next spring.

At the navy-yard, Norfolk, an additional tract of land was purchased for extending the yard, and the yard will be much benefited by the additional working space thus provided. The area of this tract is about 272 acres. Condemnation proceedings were authorized by the act of July 1, 1902, to be carried on under the general law. Accordingly, condemnation proceedings were instituted, under authority of "An act to authorize the condemnation of lands for sites of public buildings, and for other purposes." The award to the property owners under such proceedings was $572,000. As this was deemed to be much in excess of the value of the tract, it was recommended that the award be set aside by the court, and a new jury appointed. This was done, and under the subsequent proceedings the appraiser fixed a price of $475,000. As this was also considered much beyond the actual value, it was not approved, and after careful consideration of the matter, a tentative offer of $400,000 was made for the tract, subject to favorable action by the Congress, and accepted. Congress, by the act of April 27, 1904, having made an appropriation of this sum, $400,000, for the purchase, the negotiation was closed and a valid title taken at that price. This long and difficult transaction was thus brought to a close upon terms advantageous to the Government and very far below the price originally asked by the owners, and the valuations set by successive juries of award appointed under the courts. It adds to the navy-yard a large tract of land admirably situated and exceedingly valuable to the greater development of the naval establishment in those waters certain to follow.

The navy-yard at New York is much crowded for space, and some action will soon be necessary to prevent serious congestion there. The Bureau renews its recommendations of previous years for the purchase of adjoining lands.

At the insular stations not much has been done in the way of permanent improvements. At Guantanamo, Cuba, preliminary surveys and other work have been carried on, and the station is being rapidly prepared for active building operations. At Olongapo, P. I., preparations are being made to begin the construction of improvements authorized by Congress.

Under authority contained in act of March 3, 1903, appropriating $100,000 for the purchase of a wharf and adjoining land, Newport, R. I., for the joint use of the War, Navy, Treasury, and other Departments of the Government, a wharf and tract of land, known as the "Peckham wharf property," in Newport, was purchased for the sum of $69,850. The deeds were recorded December 16, 1903.

The property acquired is excellently located for the purpose contemplated, and will, when improved, afford facilities for safe and convenient landing of all Government vessels. Improvements are to be carried on under the balance of the appropriation above referred to. The property contains, approximately, 105,000 square feet.

No serious fires occurred during the fiscal year, but on July 28 last the new coaling plant at the navy-yard, Portsmouth, N. H., which had just been completed, was damaged to the extent of about $50,000 by a fire caused by spontaneous combustion in the coal stored therein. On April 30, 1904, a severe windstorm damaged the coaling plant at Dry Tortugas, Fla., to the extent of about $17,000, and on September 30, 1904, the coaling plant at the navy-yard, Boston, was similarly damaged to the extent of about $30,000.

The difficulty in securing prompt delivery of structural steel meeting Government inspection still continues to delay the construction of buildings and other improvements requiring such material. There has also been delay in the preparation of plans and specifications, owing to the difficulty in securing the services of competent draftsmen. There has also been a lack of officers in the Corps of Engineers. The examination held in August last to fill the original vacancies authorized by law in the grade of assistant civil engineer resulted in the rejection of all candidates, and the positions consequently remain unfilled. Another examination is to be held in January next, and it is hoped that successful candidates will be secured.

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RECOMMENDATIONS AND ESTIMATES FOR THE FISCAL YEAR 1905–6.

The estimates for the navy-yards and stations, covering matters under the cognizance of this Bureau, to be allowed by Congress at its coming session, are as follows:

Public works of improvement	$6,064,030.00
Repairs and preservation	600,000.00
Maintenance, yards and docks	790,000.00
Contingent, yards and docks	40,000.00
Civil establishment	161,585.32
Plans and estimates required by section 3663, Revised Statutes, and plans and specifications for public works	100,000.00
Total	7,855,615.32

The appropriations made by the acts February 18, 1904, and April 27, 1904, for public works under the cognizance of this Bureau at the navy-yards and stations amounted to $7,585,571, covering 178 objects.

This money became available on the first day of the present fiscal year, and steps were immediately taken to carry into effect the authority granted. The improvements being constructed during the current year will add much to the efficiency of the naval establishment ashore, but there are many objects of much importance remaining unauthorized. The principal item of the estimates for the next fiscal year is that

for improving the water front at the navy-yard, New York, the necessity for which has been for some time recognized. An item of $200,000 is submitted for continuing the construction of the dry dock at Guantanamo, Cuba, which was authorized by the act of April 27, 1904. An item is also submitted for the commencement of a masonry dry dock at the naval station, San Juan, to cost $1,250,000. An item of $100,000 is submitted to continue the improvement of the channel in Mare Island Strait for the purpose of maintaining the required depth of water at that yard without large annual expenditures for dredging. An estimate is also submitted for beginning another dry dock at the navy-yard, Boston, to cost $900,000. These items are of the first importance and are most urgently recommended to the favorable consideration of the Department.

The Bureau regards it as very important that still other dry docks be provided for the accommodation of the constantly increasing number of naval vessels put afloat. A graving dock of the largest class should be built upon the southern coast at Pensacola; and the docking facilities at the Norfolk Navy-Yard would be very greatly enhanced by the construction of a dry dock of small size, sufficient to take in tugboats, torpedo boats, and other small vessels and craft. This would greatly enlarge the capacity of this yard, by affording a dock of moderate cost, which would relieve the larger docks of all the small vessels. It is important that the meager docking facilities upon the Pacific coast be amplified by the construction of another dry dock at the Puget Sound Naval Station, the only one affording sufficient depth of water in its approaches for the larger naval vessels.

There are now only two naval dry docks upon this coast in service, and one under construction. It is not yet certain that the last named, although of the largest size, will be available for the heaviest draft vessels, because of insufficient navigable depth in the channels leading to the Mare Island Navy-Yard. The situation points to the high importance of considering at once the location of a dry dock and repair station at another point upon this coast, preferably at San Diego, where there is ample depth of water and where other favorable conditions exist. The situation of this harbor near the southern limit of the Pacific coast, and therefore the nearest upon our own territory to the Isthmian canal and those sections of the world south of us, emphasizes its importance to the naval establishment.

Sanitary arrangements in connection with vessels in dry dock are very important to be observed, as conducive to the health and convenience of the officers and crews. When a vessel goes into dry dock the toilet arrangements on board are put out of service until it is again afloat. Officers and men must seek water-closets and urinals on shore, and the bathing of the person and the washing of clothing must also be effected elsewhere. Improvements have been constructed at most of the yards, offering excellent water-closet accommodations, and to some extent those for bathing, but the reports of the medical officers stationed at the yards show that at several of them much remains to be done which is considered essential to the health and comfort of the enlisted men on vessels in dry dock. A crew of several hundred men of a vessel remaining in dry dock several days requires extensive conveniences on shore. Estimates are submitted designed to improve and enlarge present provisions, and to supply others where now practically none exist.

In accordance with the Department's decision, all estimates for the enlargement of power plants are eliminated, except for the Pensacola Navy-Yard, where Congress has already authorized a central power plant, pending its decision upon the question of consolidating the power plants at the several navy-yards and stations under the Bureau of Yards and Docks, as authorized by the last naval act. There is, however, an urgent demand for centralization in the matter of heating. The duty of furnishing heat for offices, shops, etc., devolves upon this Bureau under the naval regulations, but at nearly all the yards there are isolated plants operating disadvantageously. In one yard, the Bureau learns, heat is generated at ten different plants, distributed under several bureaus. Nothing could be more unbusinesslike, wasteful, and extravagant. It is the pursuit of one purpose with diffusion among the several bureaus run mad. Estimates are submitted with a view of beginning the centralizing of this work in the yards and docks power house in at least one yard in a radical manner.

Other items of the Bureau's estimates, while smaller in amount, are likewise important. The Bureau has submitted only items which are deemed necessary upon consideration of the present needs of the service. Many other items which would undoubtedly be beneficial in the near future are withheld for future consideration, in an effort to keep the estimates at the lowest possible figure.

The increase in the number of buildings in service at the navy-yards and stations makes it absolutely necessary that a larger appropriation be made for repairs and preservation, and the Bureau has submitted an increase of $100,000.

For the same reason appropriation "Maintenance" must be considerably increased to provide for the necessities of the service. The Bureau has been much embarrassed during the present year by the limit of this appropriation; practically every navy-yard and station having made applications for additional allowances for purposes undoubtedly conducive of economical administration, but which were of necessity denied.

The Bureau again renews its recommendation made in previous reports that a board of officers be appointed to consider a site for a naval station on the south Pacific coast.

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PLANS AND SPECIFICATIONS REQUIRED BY SECTION 3663, REVISED STATUTES, AND PLANS AND SPECIFICATIONS FOR PUBLIC WORKS.

This estimate is submitted to provide a fund for the payment of draftsmen and others engaged in the preparation of plans and specifications for authorized public works and for the preparation of plans and estimates required by section 3663, Revised Statutes. The appropriation for the current fiscal year is $45,000. The estimate last year was for $185,000, but was reduced through a misunderstanding as to the requirements, and the Bureau has consequently been unable to provide plans and estimates, as contemplated by the section of the Revised Statutes above referred to, for each item of improvement for which estimate is submitted. Owing to the limitation in the legislative act, the Bureau has had but $30,000 available for expenditure in its drafting rooms for the preparation of plans and specifications, and it has been considerably embarrassed on this account. It must be remembered that, in order to make a detailed estimate of a proposed

public work, it is necessary to prepare preliminary plans and that preliminary plans cost on an average 1½ per cent of the cost of the proposed public work.

REPAIRS AND PRESERVATION.

Owing to the large number of buildings put into service during the past five years, it is necessary that this appropriation be increased to provide for necessary repairs which are now beginning to be needed. An increase of $100,000 is accordingly submitted. The amount estimated is absolutely necessary to prevent wasteful deterioration.

MAINTENANCE.

The Bureau invites attention to the report of expenditures appended hereto, as report No. 3, showing the expenditures in detail from this appropriation during the last fiscal year. This report shows the various items chargeable to this appropriation, and the cost of the same during the year. The Bureau exercised the utmost economy in authorizing expenditures, but found it absolutely impossible to keep within the amount appropriated. The establishment of new stations, the increase in the number of buildings at all points, with the resulting extensions of heating, lighting, and power plants, railroad tracks, sewer systems, etc., made a drain upon this appropriation which it was impossible to avoid. An estimate is accordingly submitted for an increase of $65,000 under this head.

CONTINGENT.

The estimate for contingent expenses is the same as the amount appropriated for the current fiscal year. This appropriation is only used in cases of unforeseen occurrences, such as damages by storms, fires, etc. It is, of course, impracticable to foresee the extent of such damage, and consequently estimate is submitted for same amount as is available for the current fiscal year.

CIVIL ESTABLISHMENT.

This appropriation provides for the pay of clerks, etc., at the various navy-yards. Owing to the increase of the work carried on at the navy-yards and stations, a considerable number of employees are necessarily paid from other appropriations. It is desirable that such of those as are engaged upon permanent duty be appropriated for under the head of Civil Establishment, and a moderate increase is requested for that purpose, and for the purpose of providing adequate compensation for certain employees whose duties have been extraordinarily extended.

CIVIL ENGINEERS.

The work under the Bureau is hampered by the paucity of engineer officers. At some of the yards the civil engineers in charge are overworked and unable to give the personal attention and direction necessary to the best results in dispatch and thoroughness because of the absence of sufficient professional official aid, and some details to general charge of works deemed necessary are not made through lack of officers.

Congress, in the act of March 3, 1903, provided for an increase in this corps by 1 civil engineer, to make 28 in all, and by 12 assistant

civil engineers, no more than 3 of whom should be appointed in one calendar year. Under its operations there had been added to the corps at the beginning of the fiscal year, 1 civil engineer and 4 assistant civil engineers, so that the corps stood with 28 civil engineers and 3 assistant civil engineers. During the fiscal year 2 more assistants were obtained after competitive examination, but as 1 of these was to fill a vacancy in the lower grade, caused by promotion to fill a vacancy by retirement in the higher grade, there has resulted a net increase in the corps of only 1 since July, 1903, the numbers standing 28 and 4 in the higher and lower grades, respectively.

The examination for the purpose of obtaining the two assistants yet remaining to be appointed as for the calendar year 1904, held at the Brooklyn Navy-Yard in August, 1904, was entirely without result, none of the few applicants taking the examination having passed satisfactorily.

Another examination is to be held at the same place in January, 1905, it being hoped that because of the longer time allowed for publicity regarding it and for preparation a larger number will avail of the opportunity, and the vacancies now existing be filled. This examination will also provide further appointments for the calendar year 1905, making five which may be appointed as a result, and constituting a gratifying increase in an overworked corps.

The recommendation of last year, that commutation of quarters be allowed the corps of civil engineers, is renewed. It has been granted to the corps of naval constructors by enactment of Congress, and there is good reason why the same should be accorded other shore-duty corps.

The pay of the corps of civil engineers is one of the smallest in the naval service bestowed upon commissioned officers, and is inadequate for the character of service rendered, and compares unfavorably with that obtaining in civil life. One pay table having been established for the three seagoing corps—the line, the Medical Corps and the Pay Corps—that of distinctively shore-duty corps should be equalized with respect to each other where the attainments required and services performed are of a similarly high technical order.

It is recommended that Congress be asked to grant to the technical shore-duty corps, including the civil engineer corps, the pay and allowances established by law for naval constructors and assistant naval constructors. Such an enactment would be in the direction of equalizing the pay of officers and remove a serious discrimination which has long existed.

In the absence of such enactment and the establishing of a general pay table for all corps of the Navy based upon rank, there should be such a revision of the rank in this corps as would result in compensation adequate to the character of the service exacted, and make such compensation sufficient to attract the best talent among young men in civil life.

APPENDIXES.

The papers which accompany this report are as follows:

No. 1. Report of expenditures (material and labor) at navy-yards and stations during the fiscal year ended June 30, 1904.

No. 2. Detailed report from navy-yards and stations of expenditures (material and labor) under appropriation "Repairs and preservation, navy-yards and stations," during the fiscal year ended June 30, 1904.

No. 3. Detailed report from navy-yards and stations of expenditures (material and labor) under appropriation "Maintenance, yards and docks," during the fiscal year ended June 30, 1904.
No. 4. Detailed reports from navy-yards and stations of expenditures under appropriation "Civil establishment, Bureau of Yards and Docks," during the fiscal year ended June 30, 1904.
No. 5. Report of expenditures and appropriation for salaries for Bureau of Yards and Docks during the fiscal year ended June 30, 1904.
No. 6. Statement of appropriations for Bureau of Yards and Docks, showing amounts appropriated, obligated, and remaining unobligated June 30, 1904, under each specific head of appropriation.
No. 7. Statement of offers received during the year ended June 30, 1904, for works of improvement under the cognizance of the Bureau of Yards and Docks, as required by section 429, Revised Statutes.
No. 8. Detailed statement of estimates submitted by the Bureau for the fiscal year ending June 30, 1906.
No. 9. Tabulated statement showing the character, value, and condition of property under the cognizance of the Bureau of Yards and Docks at navy-yards and stations June 30, 1904.

Very respectfully,

MORDECAI T. ENDICOTT,
Chief of Bureau.

The SECRETARY OF THE NAVY.

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REPORT OF THE CHIEF OF THE BUREAU OF EQUIPMENT.

DEPARTMENT OF THE NAVY,
BUREAU OF EQUIPMENT,
Washington, D. C., October 1, 1904.

SIR: I have the honor to submit a report of the operations of the Bureau of Equipment for the fiscal year ending June 30, 1904, with the annual estimates for the service of the fiscal year ending June 30, 1906.

The appropriations under cognizance of the Bureau and its various branches available for use during the fiscal year were as follows:

Naval act, approved March 3, 1903.

Coal and transportation	$2,500,000.00
Equipment of vessels	2,750,000.00
Contingent equipment	35,000.00
Civil establishment	33,602.52
Ocean and lake surveys	100,000.00
Increase of the Navy, equipment	400,000.00
Naval Observatory, grounds and roads	5,000.00
Total	5,823,602.52

Urgent deficiency act, approved February 18, 1904.

Naval Observatory, grounds and roads	$5,000.00

Deficiency act, approved April 27, 1904.

Coal and transportation	$190,000.00
Equipment of vessels	300,000.00
Total	490,000.00

Legislative, executive, and judicial act, approved February 25, 1903.

Salaries, Bureau of Equipment	$13,840.00
Salaries, Naval Observatory	39,440.00
Contingent and miscellaneous expenses, Naval Observatory	16,750.00
Salaries, Nautical Almanac Office	22,240.00
Salaries, Hydrographic Office	102,058.00
Contingent and miscellandous expenses, Hydrographic Office	42,000.00
Electrotyping plant, Hydrographic Office	800.00
Pilot charts, North Pacific Ocean	2,000.00
Total	239,128.00

SUMMARY.

Coal and transportation	$2,690,000.00
Equipment of vessels	3,050,000.00
Contingent equipment	35,000.00
Civil establishment	33,602.52
Ocean and lake surveys	100,000.00
Increase of the Navy, equipment	400,000.00
Naval Observatory, grounds and roads	10,000.00
Salaries, Bureau of Equipment	13,840.00
Salaries, Naval Observatory	39,440.00
Contingent and miscellaneous expenses, Naval Observatory	16,750.00
Salaries, Nautical Almanac Office	22,240.00
Salaries, Hydrographic Office	102,058.00
Contingent and miscellaneous expenses, Hydrographic Office	42,000.00
Pilot charts, North Pacific Ocean	2,000.00
Electrotyping plant, Hydrographic Office	800.00
Total	6,557,730.52

These appropriations were adequate for the needs of the service during the year, except those for "Coal and transportation," "Equipment of vessels," and "Contingent equipment."

It became apparent before Congress adjourned that deficiencies would exist in the first two of the above-mentioned appropriations. Estimates were therefore submitted covering the necessary amount and incorporated in the general deficiency bill, as stated above.

There will probably be a deficiency in the appropriation "Contingent equipment," due chiefly to increased shipments of stores fromone navy-yard or station to another. Should this be the case, estimates to cover such deficiency will be submitted at the proper time.

* * * * * * *

COAL.

A total of 498,576 tons of coal, costing $2,519,929.82 at an average of $5.05 per ton, was purchased during the fiscal year.

The following table indicates the amount of coal purchased for steaming purposes since 1892, and the cost thereof:

Fiscal year ending June 30—	Quantity.	Total cost.	Average cost per ton.
	Tons.		
1892	73,467	$550,451.85	$7.49
1893	67,054	449,065.27	6.69
1894	94,336	640,355.96	6.78
1895	98,615	527,590.25	5.35
1896	116,903	620,131.38	5.30
1897	138,318	655,921.72	4.75
1898	452,551	2,122,005.28	4.68
1899	281,169	1,679,510.55	5.97
1900	228,395	1,572,652.97	6.88
1901	324,108	2,273,111.81	7.01
1902	382,040	2,220,211.09	5.81
1903	487,086	2,435,168.37	5.00
1904	498,576	2,519,929.82	5.05

DOMESTIC COAL.

Of the total amount purchased, viz, 498,576 tons, 395,344 tons, costing, with the transportation thereof, $1,708,446.25 at an average of $4.32 per ton, were purchased within the limits of the United States.

The following table indicates the amount of coal purchased in the United States for steaming purposes since 1892, and the cost thereof:

Fiscal year ending June 30—	Quantity.	Total cost.	Average cost per ton.
	Tons.		
1892	38,450	$221,918.66	$5.77
1893	33,257	147,999.04	4.45
1894	42,190	178,163.58	4.22
1895	50,630	181,985.89	3.59
1896	55,162	196,795.40	3.57
1897	82,051	280,091.09	3.41
1898	378,437	1,520,119.75	4.02
1899	195,216	1,238,355.40	6.34
1900	141,921	834,527.34	5.88
1901	219,042	1,379,433.51	6.30
1902	293,438	1,543,869.35	5.26
1903	385,017	1,731,064.69	4.50
1904	395,344	1,708,446.25	4.32

FOREIGN COAL.

The balance of the 498,576 tons, viz, 103,232 tons were purchased by ships, mostly abroad, costing $811,483.57, at an average of $7.86 per ton.

The following table indicates the amount of coal purchased by ships for steaming purposes since 1892, with the cost thereof:

Fiscal year ending June 30—	Quantity.	Total cost.	Average cost per ton.
	Tons.		
1892	35,017	$298,948.55	$8.53
1893	33,797	301,066.23	8.91
1894	52,146	462,192.38	8.86
1895	47,985	336,183.47	7.00
1896	61,741	423,335.98	6.85
1897	56,268	375,840.63	6.68
1898	74,111	601,885.53	8.12
1899	85,953	441,155.16	5.13
1900	86,476	738,125.63	8.53½
1901	105,066	893,677.81	8.50
1902	88,602	676,341.74	7.63
1903	102,019	704,003.68	6.90
1904	103,232	811,483.57	7.86

The amount of coal purchased during the fiscal year was 2.4 per cent greater than during the preceding year.

The average cost of coal purchased in the United States was 18 cents per ton less than during the preceding year, while the average amount paid by ships abroad was 96 cents per ton greater, the average cost on the entire amount purchased for the service being 5 cents per ton greater than that of the previous year.

The amount of coal purchased for naval use exceeded that of the preceding year by 11,540 tons; of this quantity 10,327 tons were domestic coal, while 1,213 tons were purchased by ships abroad.

The following table indicates the price of the best Welsh coal f. o. b. at Cardiff, Wales, from May, 1899, to date:

Prices of best Cardiff coal at Cardiff, Wales.

Date.	Price per ton.		Date.	Price per ton.	
1899.			1902.		
May	$3.12 to	$3.24	January	$4.14 to	$4.26
June		3.12	February	3.78	3.90
July	3.12	3.18	March	3.60	3.72
August	3.12	3.24	April	3.66	3.78
September	3.12	3.24	May	3.96	4.08
October	3.18	3.36	June	3.90	4.02
November	3.30	3.42	July	4.08	4.14
December	4.80	5.04	August	3.84	3.90
1900.			September	3.96	4.02
January	6.48	7.20	October	4.32	4.44
February	5.76	6.00	November	3.90	3.96
March	5.40	5.76	December	3.72	3.84
April	5.04	5.52	1903.		
May	5.28	5.64	January	3.72	3.78
June	5.28	5.52	February	3.66	3.72
July	5.28	5.52	March	3.42	3.48
August	5.76	6.00	April	3.42	3.48
September	6.48	6.96	May	3.66	3.72
October	6.12	6.48	June	3.78	3.90
November	4.92	5.16	July	3.78	3.84
December	4.44	4.68	August	3.90	3.96
1901.			September	3.84	3.90
January	4.80	5.04	October	3.72	
February	4.44	4.56	November	3.72	3.84
March	4.32	4.44	December	3.66	
April	4.20	4.32	1904.		
May	5.04	5.28	January	3.60	3.66
June	4.56	4.68	February	3.84	
July	5.04	5.16	March	3.90	
August	4.04	5.16	April	4.56	
September	4.80	4.92	May	4.26	
October	4.32	4.38	June	4.08	
November	4.08	4.32	July	3.84	
December	4.20	4.32			

CONSUMPTION OF COAL.

Of the total amount of coal used in ships of the Navy, viz, 498,576 tons, 42,967 tons were consumed on board of colliers, torpedo boats, tugs, etc., from which no reports are made of the specific object of expenditure.

Of the balance, 54¼ per cent was consumed for steaming purposes; 42½ per cent for distilling, pumping, heating, ventilating, and lighting; 2 per cent for cooking purposes, and 1½ per cent for steam launches.

TRANSPORTATION OF COAL.

During the year 206,348 tons of coal have been shipped to United States naval coal depots, the greater quantity to the Asiatic Station. Of this amount 131,140 tons were sent in chartered vessels, mostly under foreign flags, and 75,208 tons in navy colliers.

ARRANGEMENTS FOR SUPPLYING COAL TO SHIPS IN FOREIGN PORTS.

The Bureau has effected agreements with American agents of coal suppliers in 76 foreign ports to supply ships of the Navy with coal.

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WIRELESS TELEGRAPHY.

The work of installing wireless telegraph stations on shore and on ships has continued during the year, until a total of 58 have been established, as follows:

SHORE STATIONS.

Cape Elizabeth, Me.	Navy-yard, New York.	Key West, Fla.
Portsmouth, N. H.	Highlands of Navesink, N. J.	Dry Tortugas, Fla.
Cape Ann, Mass.	Annapolis, Md.	San Juan, P. R.
Boston, Mass.	Washington, D. C.	Culebra, W. I.
Cape Cod, Mass.	Norfolk, Va.	Mare Island, Cal.
Montauk Point, L. I.	Cape Henry, Va.	Yerba Buena Island, Cal.

SHIPS INSTALLED.

Alabama.	*Detroit.*	*Massachusetts.*	*Olympia.*
Atlanta.	*Dixie.*	*Mayflower.*	*Prairie.*
Baltimore.	*Iowa.*	*Minneapolis.*	*Solace.*
Boston.	*Illinois.*	*Missouri.*	*Texas.*
Brooklyn.	*Kearsarge.*	*Newark.*	*Topeka.*
Columbia.	*Maine.*	*New York.*	*Yankee.*

In addition to the above, contract has been made for the installation of two light-ships, which relieve each other on Nantucket shoal, and the work of installation is under way. It is intended to communicate from the light-ship on her station directly to the torpedo station, Newport, R. I.

Material has been assembled at Mare Island for the equipment of a station at the Farallon Islands, off the Golden Gate, California.

The wireless-telegraph apparatus for establishing stations at Cavite, P. I., and Cabra Island, P. I., has been forwarded, and it is probable that the former station is now in operation.

Masts have been forwarded to Honolulu and Guam for the establishment of stations.

A contract has been entered into providing for the conversion of the stations at Pensacola and Key West into long-distance stations. The same contract also provides for the establishment of long-distance stations with a maximum range of communication of about 1,000 miles at the following places, viz: Porto Rico, the naval reservation in Guantanamo Bay, and the Panama Canal Zone. The Bureau, however, has the option of designating other locations if it is considered advisable.

The following ships on the Asiatic Station have been supplied with wireless-telegraph apparatus:

Cincinnati.	*Rainbow.*	*Wisconsin.*
New Orleans.	*Raleigh.*	*San Francisco.*
Oregon.		

Arrangements have been made to equip the *Indiana*, *Chicago*, and *Kentucky*, the latter to have two stations for experimental purposes.

The following is a list of ships which it is proposed to equip at an early date, or when commissioned. To this list the Bureau believes it may be advisable to add colliers, torpedo-boat destroyers, and torpedo boats.

Albany.
Alert.
Annapolis.
Amphitrite.
Arkansas.
Bennington.
Buffalo.
California.
Castine.
Charleston.
Chattanooga.
Cleveland.
Colorado.
Concord.
Connecticut.
Denver.
Des Moines.
Dolphin.
Don Juan de Austria.
Dubuque.
Florida.
Galveston.
General Alava.
Georgia.
Helena.
Isla de Cuba.
Isla de Luzon.
Kansas.
Louisiana.
Machias.
Marblehead.
Marietta.
Maryland.
Miantonomoh.
Milwaukee.
Minnesota.
Mississippi.
Monadnock.
Monterey.
Montgomery.
Nashville.
Nebraska.
Nevada.
New Jersey.
Newport.
Ohio.
Paducah.
Panther.
Pennsylvania.
Princeton.
Puritan.
Ranger.
Relief.
Rhode Island.
St. Louis.
South Dakota.
Tacoma.
Tennessee.
Terror.
Vicksburg.
Virginia.
Washington.
West Virginia.
Wheeling.
Wilmington.

The following is a list of shore stations proposed for installation as the requirements of the Navy and the merchant service warrant their construction:

Frenchman Bay, Me., or vicinity.
Absecon Inlet, N. J.
Cape Henlopen.
Assateague Inlet.
Between Currituck Beach light and Bodie Island light.
Cape Hatteras.
Cape Lookout.
Cape Fear.
Cape Romaine.
Charleston, S. C.
Savannah River.
Cape Canaveral.
Cape Florida.
Alligator Reef.
Boca Grande.
Tampa.
Cedar Keys.
Cape San Blas.
Mobile Bay.
Mouths of the Mississippi River.
New Orleans.
Raccoon Point, La.
Sabine Pass.
Galveston, Tex.
Mouth Rio Grande River.
Bahia Honda.
San Diego.
San Pedro.
Point Conception.
Point Sur.
Point Arena.
Cape Mendocino.
Cape Blanco.
Columbia River.
Cape Flattery.
Port Townsend.
Bremerton.
Sitka.
Dutch Harbor.
Kiska Island.
Midway Islands.
Tutuila.
Cape Bojeador.
Point Piedras.
Capones.
Olongapo.
San Bernardino Straits.
Point Suban.
Point Cebu.
Point Tabunan.
Iloilo.
Surigao Straits.
Basilan Straits.

During the summer the wireless telegraph board has conducted tests of various systems between the navy-yard, New York, and the Highlands of Navesink, and between the latter and a ship at sea. The Bureau has awaited the results of this test before purchasing a large supply of apparatus, in order that it may be thoroughly conversant with the latest improvements.

The Bureau has, however, purchased three sets of wireless-telegraph apparatus from one of the leading manufacturing companies for installation in the Newport-Nantucket Shoal light-ship, provided the apparatus now installed proves unsuccessful on trial. In case the latter is satisfactory the three sets are to be installed at Cape Cod, Montauk Point, and the Highlands of Navesink. The contract guarantees a chain of communication from Cape Elizabeth, Maine, to Cape Cod, thence to Montauk Point, and thence to the Highlands of Navesink, without going through intermediate stations. The Bureau hopes soon

to add one or two additional stations and bring the chain of communication to Washington; also to connect that city in a similar manner with the southern Atlantic and Gulf coasts of the United States, Porto Rico, Cuba, and the Panama Canal.

It is proposed to shortly establish a time-signal system by wireless telegraphy in connection with the Naval Observatory, and a wireless telegraph storm-warning signal service in connection with the Weather Bureau of the Department of Agriculture.

COMPASS OFFICE.

Commander George H. Peters, U. S. Navy, has continued as superintendent of compasses during the year.

The following instruments have been purchased in order to meet the demands of the service and to supply ships now under construction:

Azimuth circles, Type III	14
Compasses, Navy:	
7½-inch	33
5-inch, conning tower, with binnacles, complete	17
4-inch, boat, with binnacles	190
Binnacles, Navy, compensating, Type VI, with all correctors	21
Peloruses, complete, standard type	44
Magnetic instruments, sets	17
Supporting tables for magnetic instruments	57
Quadrantal corrector spheres, sets	10
Bars and pintles, with tripods, for 7½-inch compass	20
Compass readers	128

The following articles have been required for but not yet received:

Azimuth circles, Type III	20
Compasses, Navy:	
7½-inch	20
4-inch, boat, with binnacles	85
Peloruses, complete, standard type	20
Peloruses, illuminated dial	40
Magnetic instruments, sets	20

The following instruments have been repaired:

Azimuth circles, Type III	15
Azimuth circles, converted from Type II to Type III	17
Compasses, Navy:	
7½-inch	28
4-inch, boat	28
2½-inch, boat	7
Binnacles, Navy, compensating:	
Converted from Type IV to Type VI	7
Converted from Type V to Type VI	6
Magnetic instruments, sets	2

In addition to the above, repairs to binnacles, azimuth circles, peloruses, magnetic sets, and bars and pintles were made, when practicable, at navy-yards.

The Type VI binnacle, fitted for the rectangular method of compass compensation, being now standard, the work of refitting such binnacles of the older type as are capable of conversion has been carried on as instruments became available. Although the converted binnacles do not possess all the advantages of the latest model, they serve equally

well for some purposes, and their issue is in the interests of economy. After conversion they are, before acceptance, subject to the same inspection and tests as new binnacles.

The usual inspection of individual compass parts has been made to ascertain if they conformed to standards in respect to weight, magnetic strength, uniformity of needles, condition of jewels, accurate marking and graduation of compass cards, etc.

The final observatory and factory tests of completed instruments have been made at the works of the manufacturers, before acceptance, to ascertain that the specifications have been complied with and the finished articles free from instrumental errors, except within allowable limits.

While these inspections are often tedious, experience has proved them to be necessary, and this work can only be properly performed by an officer possessing the requisite technical knowledge, combined with practical experience of service conditions on board ship.

ILLUMINATED DIAL PELORUS.

The illuminated dial pelorus, extensively described in previous reports, has proved very satisfactory. In this instrument the transparent glass dial is illuminated for night work by a lamp fixed beneath in a suitable chamber. The use of the pelorus at night is thus greatly facilitated, particularly when steaming under war conditions without visible lights, when the use of a portable light for reading it would not be permissible.

The reports received from cruising ships commend this new pelorus very highly, and the manufacture of a considerable number has been authorized. It is believed that it should become the standard pelorus for large vessels in the near future, notwithstanding the increased cost involved by its adoption.

COMPASS OUTFITS.

Compass outfits, partial and complete, have been assembled for the following ships under construction, viz:

Blakely.	*Galveston.*	*New Jersey.*	*Rhode Island.*
California.	*Georgia.*	*Nicholson.*	*St. Louis.*
Charleston.	*Goldsborough.*	*O'Brien.*	*South Dakota.*
Chattanooga.	*Maryland.*	*Ohio.*	*Virginia.*
Colorado.	*Milwaukee.*	*Paducah.*	*West Virginia.*
Dubuque.	*Nebraska.*	*Pennsylvania.*	

Various articles of compass equipment have been furnished to the following ships:

Abarenda.	*Denver.*	*Lawrence.*	*Petrel.*
Alabama.	*Des Moines.*	*Macdonough.*	*Potomac.*
Bainbridge.	*Detroit.*	*Marietta.*	*Preble.*
Barry.	*Dolphin.*	*Massasoit.*	*Puritan.*
Bennington.	*Fox.*	*Michigan.*	*Stewart.*
Castine.	*Glacier.*	*Minneapolis.*	*Supply.*
Cleveland.	*Hartford.*	*Missouri.*	*Tacoma.*
Columbia.	*Hornet.*	*Monongahela.*	*Texas.*
Culgoa.	*Hull.*	*Osceola.*	*Tingey.*
Davis.	*Iowa.*	*Penacook.*	*Vixen.*
Decatur.	*Kearsarge.*		

A sufficient quantity of compasses and compass instruments have been kept in store at navy-yards to supply any probable demand, and a considerable number of boat compasses furnished the naval station, Cavite, upon requisition.

Information relating to compass problems has been furnished from time to time, in response to requests from ships or individual officers.

The number of officers detailed for compass instruction has been small; it is regretted that all officers desiring this instruction could not have been spared from other duties.

As customary heretofore, various devices proposed as aids to navigation have, from time to time, been examined and reported upon.

RECOMMENDATIONS.

I desire to invite the attention of the Department to the advisability of transferring the compass office, now located in the basement of the Navy Department proper, to the Naval Observatory.

This change is considered desirable for the following reasons:

(1) All navigational instruments except compasses are supplied to ships from the Observatory, and the consolidation of shipments of these delicate appliances would be in the interest of economy and efficiency.

(2) A direct connection has been proved to exist between the sun-spot phenomena and terrestrial magnetism which governs both the theoretical study and practical manipulation of compasses. It seems appropriate, therefore, that facilities for constant comparison of theory with practical knowledge should be provided for these important navigational instruments.

(3) There would be an abundance of space for out-of-door observations, which are much restricted at present.

(4) A skilled instrument maker would be always available for slight repairs.

(5) The room now occupied by the compass would be available for other purposes, thus somewhat relieving the congestion of the overcrowded Department building.

It is believed that the change suggested would be for the good of the naval service, and I recommend the Department's approval thereof.

* * * * * * *

Very respectfully,

H. N. MANNEY,
Chief of Bureau of Equipment.

The SECRETARY OF THE NAVY.

REPORT OF CHIEF OF THE BUREAU OF NAVIGATION.

DEPARTMENT OF THE NAVY,
BUREAU OF NAVIGATION,
Washington, D. C., October 17, 1904.

SIR: I have the honor to submit the report of the Bureau of Navigation for the fiscal year ending June 30, 1904, with supplementary reports (in whole or in part) appended, from the following sources:

(A) Office of Naval Intelligence.
(B) Naval Academy.
(C) Naval Home.
(D) Naval War College.
(E) Naval Training Station, Narragansett Bay.
(F) Naval Training Station, San Francisco.
(G) Commander in Chief, North Atlantic Fleet.
(H) Caribbean Squadron, North Atlantic Fleet.
(K) Coast Squadron, North Atlantic Fleet.
(L) South Atlantic Squadron.
(M) European Squadron.
(N) Pacific Squadron.
(O) Commander in Chief, Asiatic Fleet.
(P) Commander of Cruiser Squadron, Asiatic Fleet.
(Q) Commander of Philippine Squadron, Asiatic Fleet.
(R) Estimates for the support, during the coming fiscal year, of the Bureau and those establishments for which appropriation is made under this Bureau.

During the entire period covered by this report, the late Rear-Admiral H. C. Taylor, U. S. Navy, was Chief of Bureau of Navigation; and I am, therefore, through lack of familiarity with the details of the administration of the Bureau during that time, in no position to do full justice to Admiral Taylor's work here. I can only attempt to record what has been done, adding such recommendations as the needs of the service clearly require.

It is but voicing the opinion of the Service to say that the untimely death of Admiral Taylor deprived the Navy of one whose services were of the greatest value, especially at the present time; but, while his loss is deeply felt, it will also be recognized that the work which he accomplished was the kind that will endure as a lasting benefit to the Navy. His record will stand as an inspiration to the best development of a naval officer.

Shortly before leaving Washington the last time Admiral Taylor wrote the following memorandum:

Immediately following the opening or introductory paragraph of the report, the following subjects should be placed:

(*1*) *Need of General Board or General Staff.*—State the unwisdom of building more men-of-war unless the means to administer naval affairs efficiently by a general board or general staff be authorized.

(*2*) *Ages of captains.*—Unless these be diminished, disaster is practically certain to ensue.

(*3*) *Increase of officers essential to efficiency.*—At least 50 per cent or more.

(*4*) *Cruisers.*—Urgent need of more vessels of the cruiser type.

Fully concurring in the opinion that these matters are of vital importance to the efficiency of the fleet, they are treated of immediately following.

NEED OF A GENERAL STAFF OR BOARD.

Although it is too early to draw final conclusions from the war in the Far East, one cardinal military principle has received new and striking confirmation; that is, preparedness and the swiftness of action, which can be successful only with thorough preparedness. Readiness for immediate action on the outbreak of war requires that the whole field shall have first been maturely considered and that all probable operations and contingencies shall have been suitably provided for, down to the smallest detail whose need can be foreseen.

One of the duties of the Bureau of Navigation is "the promulgation, record, and enforcement of the orders of the Secretary to the fleet," from which it follows that the preparation of these orders and advice from the military point of view as to what they shall be are also duties of the Bureau of Navigation. This might seem to indicate that the Bureau of Navigation has cognizance of the making of plans for the preparation of the fleet for war; but work of such character does not properly come under the cognizance of a bureau, for it comprehends matters pertaining to all bureaus.

There is needed, therefore, an advisory body which shall not be under the control of any bureau, but responsible directly to the Secretary in matters of naval policy. Such board should be composed of officers whose experience in command afloat has given them an intimate knowledge of the condition and needs of the fleet and of the most effective manner of employing it.

During the past four years the General Board, under the able presidency of the Admiral of the Navy, has, in connection with the Naval War College, Office of Naval Intelligence, and Board of Inspection and Survey, performed some of these duties. It is believed that the General Board, whose status has been hitherto tentative, should now be formally recognized as a permanent element of the organization of the Department.

To be more specific, the duties of such a board should be to devise measures for the effective preparation and maintenance of the fleet for war, to prepare plans of campaign, including cooperation with the Army, and employment of all the elements of naval defense, such as the Revenue Marine, Coast Survey, Light-House and Life-Saving services, naval reserves, naval militia, and merchant vessels, and also including the requirements as to time, place, and quantity of the coal, ammunition, provisions, and stores of every sort that would be needed by the fleet, and to revise these plans constantly in accordance with the latest information received; to consider the numbers and types of ships proper to constitute the fleet, the numbers of officers and men required to man them, and to advise the Secretary year by year what increase is necessary to be provided by Congress; to determine, subject to the approval of the Secretary, the location and capacity of coal depots, naval stations, reserves of ordnance, depots of supplies, and their requirements for defense; to advise the Secretary as to the distribution of the fleet and reenforcements of ships, officers, and men,

both of the Navy and the Marine Corps, and to consider and report upon naval operations, maneuvers, tactics, organization, and training, and such other subjects as the Secretary may lay before it.

It is suggested, as a proper constitution of the board, that it should consist of 7 members, the Admiral of the Navy to be its president, the chief of Bureau of Navigation, the president of the Naval War College, and the Chief Intelligence Officer as members ex officio, and the three remaining members to be officers of the line, not lower in rank than commanders, who have completed two years in actual command afloat. The membership should be changed gradually, in order to preserve reasonable continuity of policy and to prevent radical individualism. A larger board is more unwieldy.

The Chief of the Bureau of Navigation should be a member, in order that close touch may be kept between the board and the Bureau of Navigation, since it is manifest that unless the General Board be constantly informed of the employment and condition of the fleet its plans and advice become academic, losing their prime requisite of being immediately available and applicable to existing conditions.

Such a board, advisory in character, would not encroach upon the province of any authority now constituted; but, presenting to the Secretary, in well-digested form, the mature opinions of officers of rank and active experience, would furnish, in such measures as the Secretary might approve, a definite object toward which the several bureaus could shape their plans in matters under their respective cognizance, with efficient and economical coordination. This board being a continuous body, its membership changing only a part at a time, would impart continuity as well as sound progress, to the policy of the Navy, both these qualities being essential to the highest efficiency of a great military organization.

AGES OF CAPTAINS.

Attention is invited to the following extract from last year's report:

> The Bureau brings to the attention of the Department a defect which is common to most military services, whether at sea or on land, namely, the advanced age at which officers reach the more important commands. Upon the officers who are to command our battle ships will largely depend in the future the success or failure of the Navy and the country in great crises. The duty of commanding a battle ship and fleets of battle ships is one which requires, together with large experience and ability, the energy and nervous endurance which is found, as a rule, among men much younger than those who will command our battle ships and fleets for some years to come. The ages of officers now commanding our battle ships are as follows: 59, 59, 58, 57, 57, 57, 56, 56, 55, 55, and this will be about the ages of officers who will relieve them. The ages of officers now selected to relieve four of these are as follows: 57, 57, 57, 55.

The above defect is not confined to the captains' list, but extends below to commanders and above to flag officers. Comparison with foreign services gives emphasis to our disadvantage in this respect.

The Japanese navy, being of recent origin, and having been able in its organization and building up to select those features which the experience of other navies had shown to be best, presents a striking contrast to our navy in regard to ages. The captains commanding the 5 heaviest Japanese ships now in service average 45¾ years, the oldest being 49, the youngest 44 years; of 6 armored cruisers, all of which we would class as vessels of the first rate, the average age of

the captains is 46 years—the oldest 51, the youngest 44. Among the flag officers the superior of all is 56 years old; and 4 vice-admirals and 3 rear-admirals average just under 50—the youngest being 46½, the oldest 54—younger than any captain on our list to-day. The captains of our battleships average 57 years of age, the oldest being 58½, the youngest 54½; and the average age of our flag officers in command afloat is 60 years.

If it were practicable to assign commanders, captains, and rear-admirals, immediately on promotion, to commands appropriate to their new rank, the following table of the numbers and ages of the officers promoted during the past year shows what the situation in our service would be under the most favorable conditions possible with existing law:

	Number commissioned.	Youngest.	Average age.	Oldest.
Commanders	28	47¼	49½	53
Captains	18	53¾	55	57¼
Rear-admirals	11	57	59½	60¼

Following are the ages of captains in the navies of various countries:

	Youngest.	Average.	Oldest.	Compulsory retirement as captain.
England	33	48	54	55
Germany	45	48	54	None.
Russia	45	50	59	55
Japan	36	44	51	53
United States	54½	57¼	61¼	(a)

[a] None as captain; 62 years in any grade.

In other words, our youngest commander on the day he attained that rank was older than the average age of Japanese captains and about the same as the average of English and German captains, and our youngest captain had passed the compulsory retirement age for Japanese captains and was within sixteen months of the compulsory retirement age for English and German captains. He was also nearly four years older than the average age of the Japanese vice and rear admirals now in command afloat.

Furthermore, our information from abroad indicates that in England and Germany the naval administrative authorities do not regard their situation as satisfactory in this respect, and are seeking some effectual means of insuring that captains and rear-admirals shall reach those ranks younger. In England 6 officers under 30 years of age have been recently advanced to commander. In the German navy, naval authorities are feeling concerned because promotion has become so much slower that in ten years the average age of captains has advanced from 44 to 48 years; of rear-admirals, from 49 to 53, and of vice-admirals, from 51 to 55.

It is no reflection upon our commanding officers to say that we should have younger men; it is a statement of fact as regards phys-

ical condition due their age. The ceaseless vigilance and activity and the strain of great responsibility in modern sea warfare require perfect elasticity of mind and body and tax the strongest constitutions even in their prime. The ships bearing the officers of greatest importance are the objects of the enemy's most constant and determined attack; so that on the sea the senior officers must bear not only the greatest responsibility but also the brunt of the fighting—for them no relaxation is possible. The danger of the present condition is real and can not well be overestimated. To fight a war of more than a few months' duration in time, in a climate at all rigorous, and against an enemy approximating in naval strength that of the United States, would unquestionably demand physical endurance of mind, body, and nerves which are rarely possessed by men approximating 60 years of age.

Physcial endurance, moreover, is not the only consideration involved nor the most pressing one. Experience in command is invaluable in time of war, yet few of our captains could make one cruise in command of a battle ship, another in command of a squadron, and then still be on the active list, available for a larger command—that of a fleet. Thus, at the time when officers experienced in their duties are most needed it would be impossible to supply them in the most important places.

We can not afford to accept this handicap, especially at a time when all navies are striving for the highest efficiency in all respects. The Bureau does not now suggest a remedy in specific terms, feeling sure that if the need be recognized by higher authority, satisfactory means may soon be devised; but it is believed that, until a measure is adopted for the compulsory retirement of commanders and captains that do not gain promotion at certain ages, the flow of promotion and the ages of officers in the different grades will not be satisfactory.

INCREASE OF PERSONNEL.

In regard to the increase of personnel necessary for the fighting efficiency of ships, our experience, especially in the development of gun fire during the past two years, has led the Department, after prolonged consideration, to adopt important changes affecting the organization of ships, notably the larger ones, and has shown that the previous estimate of the number of line officers required to man the fleet was far below the mark. The statement made then (report of 1902) allowed to our battle ships only about half as many line officers as ships of the same class carry in the British, French, and German navies. This is particularly significant when it is remembered that the British navy felt itself embarrassed not long ago by a shortage of officers, because no more officers could be detailed to any vessel than experience had shown to be actually necessary.

The following is considered to be the necessary complement of officers for a battle ship of the latest type authorized;—of 16,000 tons displacement, 16,500 indicated horsepower, armed with four 12-inch, eight 8-inch, and twelve 7-inch guns, and having a secondary battery of forty-odd guns and two or more submerged torpedo tubes, viz:—

Commanding officer, a captain; executive officer, navigator, ordnance officer, senior engineer officer, lieutenant-commanders. Battery

officers: Each 12-inch or 13-inch turret, a lieutenant, with an ensign in the ammunition handling room of each turret; each 8-inch turret, a lieutenant, or lieutenant (junior grade); intermediate battery, 2 lieutenants (junior grade), 2 ensigns, 4 midshipmen; ammunition supply, 1 lieutenant, 2 ensigns; torpedo officer, a lieutenant; assistants to engineer, 1 lieutenant, 1 ensign; signals, 1 ensign, 2 midshipmen.

COMPLEMENTS OF OFFICERS REQUIRED FOR ALL SHIPS.

The complements for all vessels—built, building, or authorized—based on the same lines, differing according to their respective types, size, batteries, and engine power, are shown in the table following below;

In this it will be noted that midshipmen are assigned only to large cruising vessels. This is to insure their close association in actual service with officers of experience, from whose example they may acquire familiarity with the methods and habits of duty which have been confirmed by long usage in the Service. To place these young officers in positions of responsibility far beyond their experience is harmful, not only to them but also to the Service. The same rule is observed, though to a less extent, in the assignment of ensigns; the majority should be on board larger vessels, and where they are allotted to smaller ones they should be few in number compared to the older officers.

Battle ships and other large vessels carry practically all the varieties of modern naval ordnance and many of the varieties of marine machinery. Their officers, also, are in such number and of such experience as to make the routine and life on board complete in professional details and in the rigid compliance with naval regulations. These vessels form, therefore, the best school, as regards both material and personnel, for training young officers, by actual experience, to the highest standards in the performance of duty and observance of professional etiquette.

Officers who receive their early training in battle ships are qualified for such duties as may be subsequently assigned to them in vessels of other types. Such is not the case, however, with officers whose first experience at sea has been in small vessels. There the training and routine are necessarily much abridged, and the officers are so few in number that the work imposed upon each is so varied in character that it is impossible to carry it on with the strictness which is essential to the formation of correct professional habits and methods of duty.

Few, if any, will question the desirability of such a system, which would establish sufficiency in numbers, uniformity in rank and numbers among similar vessels, and rank appropriate to duty and responsibility. Hitherto, the insufficiency of officers has prevented its adoption; but if the necessary legislation be enacted to make it practicable, careful and persistent adherence to the system will prove of inestimable benefit in the development of the highest efficiency.

Complements of line officers, not including warrant officers.

Vessels.	Ranks.							Total.	No. of vessels.	Totals of ranks.						
	Captains.	Commanders.	Lieutenant-commanders.	Lieutenants.	Lieutenants (junior grade).	Ensigns.	Midshipmen.			Captains.	Commanders.	Lieutenant-commanders.	Lieutenants.	Lieutenants (junior grade).	Ensigns.	Midshipmen.
Indiana class and Iowa	1		4	8	3	6	4	26	4	4		16	32	12	24	16
Kearsarge and Kentucky	1		4	7	3	6	10	31	2	2		8	14	6	12	20
Alabama class (3), Maine class (3), Tennessee class (2), North Carolina class (2)	1		4	6	2	8	10	31	10	10		40	60	20	80	100
Virginia class (5), Connecticut class (2), Vermont class (4)	1		4	8	4	8	10	35	11	11		44	88	44	88	110
Idaho class (2)	1		4	8	4	6	10	33	2	2		8	16	8	12	20
Colorado class (6)	1		4	6	2	8	10	31	6	6		24	36	12	48	60
Charleston class (3)	1		4	4	2	6	8	25	3	3		12	12	6	18	24
Texas	1		4	5	1	7	6	24	1	1		4	5	1	7	6
Brooklyn	1		4	5	4	6	6	26	1	1		4	5	4	6	6
New York, Olympia	1		4	4	3	5	6	23	2	2		8	8	6	10	12
Puritan, Amphitrite, Monadnock, Monterey, Terror		1	2	3	2			8	5		5	10	15	10		
Miantonomoh		1	2	3	1			7	1		1	2	3	1		
Columbia, Minneapolis	1		3	3	2	3	5	17	2	2		6	6	4	6	10
Baltimore, Chicago, Newark, San Francisco		1	3	3	2	3	5	17	4		4	12	12	8	12	20
Albany class (2), Cincinnati class (2), Chester class (3)		1	2	2	2	2		9	7		7	14	14	14	14	
leveland class (6), Atlanta class C(2)		1	1	2	2	2		8	8		8	8	16	16	16	
Arkansas class (4)		1	1	3	3			8	4		4	4	12	12		
Buffalo class (4)		1	1	2	4			8	4		4	4	8	16		
Topeka, Panther, Detroit class (2), Bennington class (3)		1	1	2	3	1		8	7		7	7	14	21	7	
Dolphin, Helena, Wilmington, Nashville, Castine, Marietta, Don Juan de Austria, Isla de Cuba, Isla de Luzon, Wheeling, Dubuque, Paducah, Gunboat No. 16, Alert, Ranger, Annapolis class (4), Relief, Solace		1	1	2	2	1		7	22		22	22	44	44	22	
Petrel, Bancroft			1	2	3			6	2			2	4	6		
Erie class (2)			1	3	3			7	2			2	6	6		
Glacier, Celtic, Culgoa, Rainbow, Iris, Supply, Abarenda, Marcellus			1	2				3	8			8	16			
Destroyers			1	1		2		3	16			16	16		32	
Torpedo boats				1		2		2	30				30		60	
Small torpedo boats (Gwin, Talbot, McKee, Mackenzie)					1			1	4					4		
Submarines					1			1	8					8		
Personnel staff of fleet, squadron, and division commanders (about 12)									12	2			12	12	2	
Grand totals										46	62	285	504	301	476	404

The foregoing table shows the officers that would be required for sea service on the outbreak of war, when every available vessel would be required for active service; but the table does not provide for officering the auxiliary vessels—whose number can not be stated—nor for details on shore in connection with the equipping, refitting, and supplying of the fleet and other necessary work.

The numbers in the grades of captain and commander should be considered in connection with the subject of the ages of officers of flag and command rank. But before leaving the subject, attention is invited to the fact that not all the officers in the grades of captain and commander are available for sea duty, because of the presence in those grades of a number of officers of the former Engineer Corps,

who are by law restricted to the performance of engineer duty on shore only. The July Navy Register shows 8 such officers in the list of captains and 15 in the list of commanders (one of whom has since been retired). Of the first 10 lieutenant-commanders, 7 are ex-engineer officers, who will become commanders before any of the before-mentioned 15 are promoted out of the grade, thus (omitting 4 who are or will be extra numbers) making 15 per cent of the commanders at one time not available for sea duty.

Farther down the lieutenant-commanders' list there are 36 ex-engineers out of a total of 111; all these are available as lieutenant-commanders for sea duty; but when all of them shall have been promoted to commanders, there will be (allowing 25 per cent of casualties in the meantime) 25 per cent of all the commanders not available for sea duty. Later on, in the grade of captain, this proportion would be greater.

The simplest remedy for this would be to provide that those officers of the line who are restricted by law to the performance of engineer duty only shall, on reaching the grade of commander, become additional numbers, which some of them already are.

With regard to officers below command rank, existing law places no limit upon the numbers of ensigns and junior lieutenants, the supply of these being dependent only upon the number graduated from the Naval Academy and the number promoted from warrant officers. As yet the increase due to recent large classes of midshipmen has not begun to be felt; but it soon will be, and no additional legislation in respect to entries at the foot of the commissioned grades will be needed.

There are now allowed only 350 lieutenants, against the 500 shown above to be necessary for sea service in regular men-of-war. As there would be considerably more than that number required for all purposes at sea in time of war, it is recommended that the number of lieutenants be fixed at 600. The law which requires ensigns to serve three years before promotion would operate gradually to fill up the vacancies made on the list of lieutenants by the above increase.

The number of lieutenant-commanders now allowed is 200; it is recommended that this be increased to 300, basing this number on the table above.

Further considerations which have led to the foregoing recommendations may be briefly stated as follows:

The extent and responsibility of the duties of seagoing officers have grown with the increase in size of ships, while the shortage of officers and lack of trained men have imposed many additional duties and multiplied the difficulties in the way of their satisfactory performance. This is especially the case with the executive, navigator, senior engineer officer, and ordnance officer, all of whom have a double charge; that is, responsibility not only for the efficient condition of the material, but also for the personnel in handling it.

In ships of the first rate, comprising battle ships and the largest cruisers, which are captains' commands, all four of these officers should be lieutenant-commanders; in other vessels commanded by captains or commanders, from three lieutenant-commanders to one, according to the size and importance of the vessel. The Bureau endeavors to assign officers on this plan, but there are not sufficient

lieutenant-commanders available, which makes it necessary in some cases to detail lieutenants as navigators or ordnance officers of vessels of the first rate.

The assignment of officers to the regular performance of duties belonging to a higher grade is objectionable, because it operates against that variety of experience in each grade which is indispensable to the thorough, symmetrical development of an officer; because it reduces the number of officers, already too small, available for duties proper to their own grades; because such officers are placed in a false position among others who have the rank appropriate to their duties, and also because they do not receive the corresponding compensation.

It is especially desirable that every battle ship and other powerful vessel requiring the greatest skill and experience for proper efficiency, should have her full quota of officers of suitable rank; yet many of our battle ships have lieutenants as navigators, practically all have lieutenants as ordnance officers, and several battle ships have ensigns and even midshipmen for watch and division officers. This very unsatisfactory and even dangerous condition is due to the many urgent demands for officers, the existing inadequacy of numbers often making it impossible to detail officers of appropriate rank. The increasing numbers of midshipmen graduated from the Naval Academy will in time partially relieve the situation in the lower grades, but more lieutenant-commanders and lieutenants are needed than existing law provides.

Inasmuch as nearly all of our ships about to go into commission or approaching completion are of the first rate, and larger than their predecessors, thus involving more responsibility for their officers, the necessity for more lieutenant-commanders will soon be much greater than it is now.

Further, in view of the important part played by torpedo craft in the recent hostilities in the East, it is deemed advisable that the large vessels of this type should be commanded by lieutenant-commanders—officers who have not only had the requisite previous experience in torpedo work, but also are prepared to act with sound discretion when placed in a situation involving the consideration of questions of diplomacy and international law.

The increase recommended will not only supply an urgent and growing need of the Service, but it will also partly correct an inequality of rank with length of service among officers of the line and medical and pay corps which is shown by the following table.

	Sea service.		Total service.	
	Years.	Months.	Years.	Months.
The senior 60 lieutenants	12	10	17	1
The senior 15 paymasters	6	3	10	9
The senior 10 passed assistant surgeons	3	3	4	3
The junior 96 (half) lieutenant-commanders	13	11	22	5
The junior 43 (half) surgeons	5	7	9	0
The senior 96 (half) lieutenant-commanders	16	4	26	4
The senior 42 (half) surgeons	9	4	20	5

NOTE.—In this table six months' (two practice cruises) sea service and four years' total service (Naval Academy) are deducted from the figures given in the Register for line officers. In making this comparison numbers are taken from each list in equal proportion.

From the foregoing it will be seen that the junior half of all the surgeons have equal rank with lieutenant-commanders, who have an average of eight years more sea service and thirteen years more total service (not including time at the Naval Academy); and these same surgeons rank a grade higher than the senior 60 lieutenants, who have an average of seven years more sea service and eight years more total service.

This is not intended as a criticism of the relation of rank to age in the Medical and Pay Corps. On the contrary, their condition in that respect is conducive to the most zealous and efficient service, being very nearly the same condition that it is desired to obtain in the corresponding grades of the line.

VICE-ADMIRALS.

The recommendation made in previous reports for the authorization by Congress of two vice-admirals is renewed. Hitherto, rank higher than rear-admiral has been conferred on a naval officer only in recognition of greatly distinguished achievements by an officer in important command in time of war; but it is strongly urged that the already great and increasing importance and responsibility of the commanders in chief of our two large fleets, in time of peace as well as in time of war, is sufficient reason for their having the rank of vice-admiral.

On the North Atlantic and the Asiatic stations our naval forces are organized in fleets, the vessels of each being so numerous that they have had to be organized in several squadrons, each one of which is commanded by a flag officer subordinate to the commander in chief of the fleet.

These squadrons—component parts of a fleet—are appropriate commands for rear-admirals; but that the commander in chief of a fleet should hold no higher rank than his subordinate flag officers is anomalous, as if the squadron commanders were of the same rank as the captains of ships or the captain of a ship of the same rank as his executive officer. As a matter of fact, the commanders in chief of the North Atlantic and Asiatic fleets have actually performed the duties of vice-admiral ever since, several years ago, it became necessary for efficient administration to order junior flag officers under them.

An important reason for creating vice-admirals for the command of the two fleets is to place them on equality of rank and precedence with foreign officers holding similar commands.

In naval affairs certain customs common to all nations must govern, as in international affairs generally. For the chief command of a fleet the rank of vice-admiral is, by common consent, appropriate—except in a few cases where an admiral is assigned. There is no considerable naval power except the United States whose largest fleets are not under the flags of vice-admirals. The result is that on the Asiatic Station the American commander in chief is junior to the British, German, French, Japanese, and Russian commanders in chief, though several of these command fleets less numerous or powerful than his; and in the North Atlantic, the commander in chief of the most powerful fleet of our Navy is outranked by the British admiral in the same waters, where there is not a single battle ship under his flag. Moreover, in many cases, owing to the advanced

age at which our officers reach flag rank, the subordinate flag officers of foreign commands frequently rank higher than the officer in chief command of our whole naval force.

It needs no argument to prove that the effect is derogatory to the dignity of the Navy and the nation. Our officers should not be placed in this unsuitable relation toward foreign officers holding equal or inferior commands; and it is manifestly undesirable—not commensurate with the influence and importance of this nation—for our flag officers to be beneath all others in the matter of precedence in international affairs with which they have to do as representatives of the United States.

It is recommended that the rank of vice-admiral be conferred upon the officer detailed as commander in chief of each of these fleets; the law reviving this grade providing that no officer should hold the rank of vice-admiral, on either the active or retired list, except while exercising such command, unless he shall have had command afloat as a vice-admiral for two years, or else as a flag officer for three years altogether, at least one of those years as a vice-admiral. It should also be expressly stipulated that the grade of vice-admiral be excepted from those provisions of the personnel act of March 3, 1899, which otherwise would make it a "higher grade" for purposes of retirement.

CRUISERS.

As auxiliaries to squadrons of battle ships cruisers are indispensable. We require a cruiser squadron in the North Atlantic, the South Atlantic, and the Caribbean, and also on the European Station, all these being ready, on the approach of hostilities, to combine in one fleet wherever needed. In the Pacific our force should consist of a large squadron of cruisers; and on the Asiatic Station the battle ships should be supplemented by a full squadron of cruisers.

Vessels of this type are well suited for carrying on the various local duties incident to the protection of American interests abroad in time of peace, and squadrons of them are invaluable for training officers and crews to expertness in handling ships in company.

Counting all of the cruiser type, including the latest ones authorized, our present number is insufficient. Such vessels could not be improvised on the outbreak of war, as the use to which they are put is not scouting only, but duty more combative, demanding qualities of offense and defense which can not be imparted to a converted vessel. It is recommended, therefore, that our deficiency in this respect be considered by the General Board in connection with the whole subject of ships.

BATTLE SHIP AND DESTROYER.

Early events of the hostilities in the Far East and the subsequent accounts of various exploits, in all of which torpedoes or submarine mines had a prominent part, have given rise to considerable discussion as to the relative values of battle ships and torpedo craft, especially the larger type of torpedo boat destroyers. Some have gone so far as to declare that the usefulness of the battle ship is at an end; that to incur the expense of building more would be sheer waste. It is too soon to draw final conclusions from the teachings of this war, but already there are signs that the conviction adverse to battle ships

has been unsettled, if not altogether abandoned in the minds of many, with the receipt of more complete and authentic information of the naval operations of the belligerents.

Although a hundred and more torpedo boats and destroyers have been actually engaged for five months against battle ships which have been exposed to attack times without number, we have yet to learn authoritatively of a torpedo from a torpedo vessel causing the total loss of a single battle ship. Those which have been sunk owed their destruction to submarine mines, anchored or broken adrift, torpedo vessels not contributing to the result, except by the confusion and sense of greater danger due to their presence. It is evident that in the final summary of losses the achievements of torpedo vessels will count less than was at first supposed. It can not be claimed, therefore, that there has so far been anything to discredit the battle ship as a type; nor is any such outcome to be expected from this war; whatever may be the casualties among battle ships.

To wage successful warfare with a naval force requires now, as it has required in all ages, a type of vessel which shall combine, in the most effective manner, the qualities of offense, mobility, defense, endurance, self-maintenance. Such vessels are battle ships, and they constitute the main strength and reliance of a navy. Other types—armored cruisers, protected cruisers, torpedo vessels—possess all or some of these qualities, but in degrees so different as to unfit them for the heavy encounters which the battle ships are designed to endure without disablement.

It is no revelation that a battle ship's existence is menaced by torpedo vessels. Such a risk has always been realized, and provision is made against it in the construction of the vessels themselves by the method of interior subdivision and also by giving squadrons of heavy ships the protection afforded by torpedo-boat destroyers and other light vessels. Reports of injuries to vessels by torpedo explosions during the war would seem to establish as a fact that protection by interior subdivision is considered at least partly successful, since the ships that have been hit by a torpedo from a torpedo vessel—if, indeed, there have been any such—have been disabled only temporarily, not sunk or destroyed. In some of these cases the result might have been different had the attack occurred farther off shore, but this does not alter the general conclusion.

So, on the other hand, with regard to torpedo vessels, it will be recalled that after the war with Spain not a few persons said that the torpedo vessels were of no practical value for war purposes. The moral effect alone of the torpedo, it is safe to say, will prevent this opinion being further entertained, notwithstanding that the tangible results so far achieved by the automobile torpedo are less than was at first reported.

Both battle ships and torpedo vessels doubtless will be improved in certain features which the war may show to require change, but no war can alter the essential military principles on which these types of vessels are built. For a clear exposition of the principles involved in this discussion reference is made to a recent article on this subject by Captain Mahan, from which the following is quoted:

> The destruction of the Russian battle ship *Petropavlovsk* by contact with a submarine mine has given a renewed impetus to the contention, never wholly quiescent, that a large, heavily armored ship of war is obsolescent and an

anachronism, because liable to vital injury or total loss by means so inexpensive relatively to her own cost. It has apparently occurred to no one similarly to contrast the relative intrinsic value of the rifle bullet with that of the trained soldier or accomplished general whom it slays. The results to be expected from the torpedo are set forth as seductively as the prospectus of a new corporation, promising the largest conceivable profits with expenditure inconceivably small. The trouble with these calculations is that they fail to take accurate account of what the desired result is in naval operations, the necessary indisputable aim of which, in the unanimous opinion of all competent judges, is the control of the sea. The disabling or destruction of battle ships, one or many, is a means to this end doubtless, but it is itself only a means, not an end, and the two can not be confounded without vitating any course of reasoning based upon such initial confusion. Because an expensive battle ship may be removed from the field of action by an inexpensive torpedo it by no means follows that control of the sea can be maintained by vessels differing radically from the historical class, of which in our day the battle ship is the type.

The question, in short, is not, as commonly understood, battle ships versus torpedo. It is the big ships versus small ships as means for controlling the sea in the full sense of that expression. It is the bigness of the battle ship, the extent of the loss, military and pecuniary, that produces the impression under the influence of which so much editorial writing and platform speaking are done. * * *

Upon what does military efficiency, both sea and land, depend in matters of material, as distinct from personnel? Upon two principal factors: Concentration of force, and mobility. Most have heard the homely rendering of these great principles, true in all ages: "Get there first and with the most men." The ocean, the scene of naval warfare, from the vastness of its extent and the consequent great distances to be covered, makes a special demand upon mobility—the getting there first; but also it is upon the sustained power of the individual ship to do this that the arriving with the "most" men—the most ships—also depends. Exactly as in the case of the forced march of troops to seize a military position the arrival in adequate numbers would depend upon the marching of the men, not merely at what rate each can go a mile, but how long most of them can sustain the arduous exertion. Under favorable conditions the torpedo vessel for a limited time has speed from 50 to 75 per cent greater than that of a battle ship, but a few days ago a Russian officer, estimating the length of time for the Baltic Fleet to reach the East, was quoted as saying: "Two months if without torpedo vessels, with them three months."

In the matter of speed for battle ships, again, I am not an extremist. Much of the exaggerated speed demanded for vessels of that class I look upon as a frill, for the same reason that the rapid march of a detachment of troops depends, not upon the powers of a few athletic walkers, but upon the average rate the whole body can maintain without serious straggling. Battle ships are meant to act strictly in concert with others—an isolated battle ship is an anomaly—and a speed much below the highest is all that is likely to be got from several together, because causes particular to one or two will retard the others. For all this, however, it remains true that a speed high for an average of several ships—for a fleet—should be sought and can be obtained. Now, the speed of ships, whether of war or peace, is of two kinds—for the moment, a spurt of three or four hours or "over a measured mile," and the sustained sea speed under various conditions of weather. In the former the small vessel, with weight of hull thinned down to the utmost and crammed with machinery, can in smooth water far outrun the armored ship. Under such conditions she can get there first, but her "most men" will depend upon the ability to plant her torpedo. In rough seas speed depends upon momentum, and momentum means weight; consequently the torpedo vessel, under conditions at which the battle ship laughs, loses speed rapidly and becomes hopelessly slower.

Nor is it due to rough seas only that the torpedo vessel is less fast for long distances. She has to renew her supply of coal much more frequently. This means either friendly ports at short intervals—a condition to be realized only in a very restricted field of warfare—or else coaling at sea, an operation always difficult, but many-fold so for small, light vessels, which the swell tumbles about mercilessly because of their lightness, and which for the same cause are very easily stove.

For the reasons adduced, the small ship is, always has been, and always will be greatly inferior in speed to the large one in the long run. Particular circumstances may at a moment favor her; but in a few thousand miles of distance

or a year of time she must prove inferior in that element of force which we call mobility. It remains, then, to consider how she will compare in point of concentration of power.

It may be contended that if her torpedo is capable of sinking a battle ship you have in that alone as striking a concentration of power as can be desired. I think, however, that it will be readily seen that this is not so. I mean that the ability to reach striking distance, and to obtain any certainty of aim, such as that distance alone would insure, is by no means probably within her control. It makes no difference how great a power is, unless it can be applied. * * * I will not here dwell further upon this point, but confine myself to stating a serious doubt as to the power of the small vessel, singly or in numbers, to insure her weapon striking a proposed victim. Of course, instances will happen, just as instances of overcoming almost any difficulty do occur; but that is not insuring or assuring. It is a happy chance.

To assure delivering a decisive blow at a man or a ship which you mean seriously to injure you must be able to "stand up" to him or it. Of course, there is lurking in the dark corners and striking from behind; and that is the rôle of the torpedo vessel as at present constituted. She is an assassin; using the word not as a term of reproach, for which there is no occasion, but as a metaphor. It is, in fact, the rôle ascribed to her by her warmest advocates, and a perfectly proper one, for the element of treachery is not in it. But all the same it is the policy of the weak, and there has never yet appeared any reason to suppose for it a success, on a large or decisive scale, greater than that which has ever attended such a policy. Now and again a great man or a great ship may be so struck; but neither nations nor fleets are thus destroyed. It is the concentrated power which can come out into the open that wins in the end. * * *

It can not be too clearly or too firmly kept in mind that the rivalry here is not between a weapon and a big ship, but between small ships and big ships. The automobile torpedo is a weapon which any class of vessel may carry, and which can be used by all, with the chances of accurate use favoring the larger and steadier. It is a weapon having certain very formidable attributes, and also certain inherent defects. Its strength is that its effect depends upon an explosion produced with slight momentum, needing little force of impact, but above all its great danger to the opponent lies in the fact that to the end of its flight it ranges the water at a constant depth, which I understand can be as small as 10 feet. Any floating body crossing its path and immersed more than 10 feet will therefore receive the full shock of the charge; with what fatal results the *Petropavlovsk* has shown, although in her case the mine was stationary, not automobile.

Accepting 10 feet as the depth of submersion, it follows that to be immune from the torpedo a vessel must draw less than 10 feet of water; with a further deduction in that the movement of the waves, which may not affect the weapon, may lower her to its depth. Under such limitation as to draft I presume naval architects would consider it impossible to produce seagoing ships possessing the initial speed, the weight with consequent momentum, and the coal-carrying capacity, which are the three principal factors of that sustained speed which constitutes the mobility of the battle fleet. But even could this be effected within the draft named, there must be a tonnage which would involve some superstructure, something above the water line; and in fact, sustained high speed through heavy seas of itself demands this. The instant you have such superstructure you have a target for guns; and the presenting of such target induces guns upon the enemy, and armor on oneself for protecting against them. With these you are at once again on the high road to the battle ship. It is interesting to note in connection with this, that when the torpedo vessels of the contending fleets at Port Arthur have met they have fought with guns. "As soon as the Japanese destroyers discovered her (a Russian torpedo-boat destroyer) they went in pursuit, cut her off, and then destroyed her in ten minutes with their 6-pounder guns." But their own weakness, such as has been here insisted on, was apparent immediately after. Another destroyer was seen, but escaped; "for it was now light, the cruiser *Bayan* was in sight, and it was impossible for the second division of Japanese destroyers to tackle the *Bayan's* quick-firers. Power concentrated in one vessel prevailed over power dispersed among several.

Power so concentrated, if equally well handled, will always prevail: not only against an equal amount, but even against a decidedly superior amount dispersed among several. This is elementary military experience, appearing in another form in the commonly understood virtues of central position, interior lines,

massed forces, and single command. This, in brief, is the argument for the battle ship—single command and concentrated force. There is further the utterly unappreciated, in fact the wholly ignored, factor of economy. It is much more expensive to put the same aggregate tonnage into two ships than into one. Speaking within limits, you get less military efficiency at higher cost. You need two captains for one, nearly twice as many officers, and crews which, while they may not be the double of one ship, will exceed it by a very large percentage. And the more you divide your tonnage—say 10 or 20 torpedo vessels for one battle ship, the greater the economical loss. This was the fatal economical error of Jefferson's seductive cheap gunboat policy, a measure which insured a minimum of military usefulness at a maximum of pecuniary outlay.

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ORGANIZATION AND EMPLOYMENT OF THE FLEET.

Following is an account of the distribution of the force in commission, with an outline of its employment, the latter being given in greater detail in the reports from the several stations:

NORTH ATLANTIC STATION.

The North Atlantic Fleet has been under the chief command of Rear-Admiral A. S. Barker throughout the year. This fleet is organized in three squadrons, namely: The Battle Ship Squadron, under the immediate command of the commander in chief; the Caribbean Squadron, composed of cruisers and smaller vessels, which was under the command of Rear-Admiral J. B. Coghlan until March 28, 1904, when he was succeeded by Rear-Admiral C. D. Sigsbee; and the Coast Squadron, composed of some of the older armored vessels, three new monitors, and a number of destroyers, all under the command of Rear-Admiral J. H. Sands.

The Atlantic Training Squadron, composed of 2 protected cruisers of regular naval type, and a number of others—converted vessels and wooden ships, some of the latter having sail power only—has been generally an independent command on this station, under Rear-Admiral W. C. Wise, from the date of its organization at the beginning of the fiscal year; but, for cooperation in the summer maneuvers of 1903, and for service in the Caribbean, this squadron has been twice placed temporarily under the orders of the commander in chief of the North Atlantic Fleet. That is, for training purposes only the squadron is independent; but when it comes into relation with affairs of the station it is placed subject to the admiral who has general cognizance of all naval affairs on the station.

SOUTH ATLANTIC STATION.

The United States South Atlantic Squadron, composed of cruisers, was under the command of Rear-Admiral G. W. Sumner until September 9, 1903, when he returned to the United States for retirement for age, turning over the command temporarily to Capt. Richard Wainwright. Rear-Admiral B. P. Lamberton succeeded to the command October 13, 1903, but was invalided therefrom January 26, 1904, Captain Wainwright again succeeding temporarily to the command of the squadron until Rear-Admiral C. D. Sigsbee hoisted his flag February 17, 1904. This squadron left the South Atlantic Station in December and came to the West Indies for participation in the

maneuvers with the North Atlantic Fleet; after carrying out its record target practice it was assigned as the Caribbean Squadron, the flagship and some other vessels formerly composing that squadron being detailed to the European Station.

EUROPEAN STATION.

The United States European Squadron, composed of cruisers, was under the command of Rear-Admiral C. S. Cotton until February 16, 1904, when, at his own request, he was detached and placed on the retired list. Capt. Harry Knox, commanding the flagship *Brooklyn*, assumed temporary command until March 28, 1904, when the vessels composing the European Squadron, being at that time at the target practice rendezvous at Pensacola, were assigned to the South Atlantic Station, replacing the squadron transferred from there to the Caribbean. Rear-Admiral J. B. Coghlan was in command of the new European Squadron for a short time until relieved April 20, 1904, by Rear-Admiral T. F. Jewell.

PACIFIC STATION.

The Pacific Squadron, composed of 1 armored cruiser, 1 new monitor, 4 cruisers and gunboats of the third rate, and 2 destroyers, has been under the command of Rear-Admiral Henry Glass throughout the year. This squadron also includes 2 colliers regularly attached.

ASIATIC STATION.

The United States Asiatic Fleet was under the chief command of Rear-Admiral R. D. Evans until March 21, 1904, when he was succeeded by Rear-Admiral P. H. Cooper. This fleet is organized in three squadrons, namely, the Battleship Squadron, under the immediate command of the commander in chief, the Philippine Squadron, which was under the command of Rear-Admiral Yates Stirling until March 21, 1904, when the command was turned over temporarily to Commander George L. Dyer, who was relieved April 23, 1904, by Capt. W. M. Folger, and the Cruiser Squadron, under the command of Rear-Admiral P. H. Cooper until March 21, 1904, when he was succeeded by Rear-Admiral Yates Stirling.

The organization further includes a Gunboat Division, forming part of the Battleship Squadron, composed of small vessels principally employed on the coast and inland waters of China and Korea, a Flotilla Division of five destroyers which joined the fleet in April, and a number of colliers regularly attached to the fleet.

The vessels composing the several squadrons were as follows:

NORTH ATLANTIC STATION.

Battle Ship Squadron.—*Kearsarge*, flagship after August 1, 1903, temporarily with European Squadron until July 17, 1903; *Alabama; Illinois*, flagship until August 1, 1903; *Iowa*, recommissioned December 23, 1903; *Maine; Massachusetts*, transferred to Coast Squadron April 8, 1904; *Missouri*, commissioned December 1, 1903; gunboat *Scorpion*, tender, transferred to Caribbean Squadron April 5, 1904.

Caribbean Squadron.—Before March 28, 1904: *Olympia*, flagship; *Atlanta; Bancroft*, joined squadron about December 5, 1903; *Castine*, recommissioned November 12, 1903; *Dixie*, recommissioned October 1, 1903; *Marietta*, recommissioned February 11, 1904; *Mayflower*, temporarily assigned to squadron

November 8, 1903, to January 24, 1904; *Nashville; Newport*, joined squadron July 16, 1903; *Panther*, placed out of commission October 26, 1903; *Prairie*, temporarily assigned to squadron, November 6, 1903, to April 11, 1904; *Stewart*, temporarily with squadron, January 5 to April 7, 1904; *Truxtun*, temporarily with squadron January 5 to April 7, 1904. After March 28, 1904: *Newark, Bancroft, Detroit, Dixie, Montgomery; Nashville*, on detached service, Mississippi River; *Newport; Scorpion*, temporarily attached, April 5, 1904.

Coast Squadron.—Texas, flagship; *Indiana*, placed out of commission December 29, 1903; *Massachusetts*, joined April 8, 1904; *Arkansas*, under repairs until March 1, 1904; *Florida*, under repairs until February 6, 1904; *Nevada*, under repairs until March 16, 1904; *Hartford*, attached to Atlantic Training Squadron September 2, 1903, to April 12, 1904. First Torpedo Flotilla (detached from Coast Squadron September 26, 1903): *Decatur, Bainbridge, Barry, Chauncey, Dale.* Second Torpedo Flotilla (attached to Coast Squadron September 26, 1903. This date refers to the flotilla generally, the composition of the flotilla having been several times changed, from various causes): *Truxton, Whipple, Worden, Hull, Hopkins, Lawrence, Stewart.*

Atlantic Training Squadron.—Minneapolis, flagship, recommissioned October 5, 1903; *Columbia*, recommissioned November 9, 1903; *Alliance*, placed out of commission November 27, 1903; *Buffalo*, on detached service convoying First Torpedo Flotilla to Manila, December 17, 1903, to April 21, 1904: *Essex*, placed out of commission December 5, 1903; *Hartford*, joined squadron September 2, 1903, detached April 12, 1904; *Monongahela*, detached from squadron May 5, 1904; *Prairie*, temporarily with Caribbean Squadron November 6, 1903, to April 11, 1904; *Yankee*, flagship from July 15 to October 21, 1903.

SOUTH ATLANTIC STATION.

Before March 28, 1904: *Newark*, flagship; *Detroit, Montgomery;* gunboat *Gloucester*, tender. After March 28, 1904: *Brooklyn*, flagship; *Atlanta, Castine, Marietta.*

EUROPEAN STATION.

Before March 28, 1904: *Kearsarge*, temporarily with squadron and temporary flagship from July 1 to July 17, 1903, then rejoined Battle Ship Squadron, North Atlantic Fleet; *Chicago*, flagship from July 17 to July 22, 1903, detached squadron August 1, 1903; *Machias; San Francisco*, detached squadron January 26, 1904. After March 28, 1904: *Olympia*, flagship; *Baltimore, Cleveland.*

PACIFIC STATION.

New York, flagship; *Bennington; Boston; Concord; Marblehead*, temporary flagship September 30, 1903, to January 26, 1904; *Petrel*, commissioned October 19, 1903, temporarily detached from squadron March 29, 1904; *Wyoming; Paul Jones*, commissioned December 14, 1903; *Perry*, assigned to squadron May 24, 1904; *Preble*, commissioned December 14, 1903; colliers *Nero* and *Saturn*, the latter being on detached service.

ASIATIC STATION.

Battle Ship Squadron.—Kentucky, flagship until she left the station, March 21, 1904; *Oregon; Wisconsin*, flagship after March 21, 1904; *Monadnock; Monterey.*

Gunboat Division, Battle Ship Squadron.—Annapolis, left the station June 22, 1904; *Callao; Elcano; Helena; Vicksburg*, left the station June 9, 1904; *Villalobos; Wilmington.*

Flotilla Division, Battle Ship Squadron.—Bainbridge, carries flotilla commander; *Barney, Chauncey, Dale, Decatur.*

Cruiser Squadron (organized in October).—*New Orleans*, flagship; *Albany*, until March, 1904; *Cincinnati, Raleigh.*

Philippine Squadron.—Rainbow, flagship; *Albany*, left the station May 8, 1904; *Annapolis*, transferred to Cruiser Squadron February 26, 1904; *Callao; Don Juan de Austria*, left the station December 16, 1903; *Frolic*, temporarily with Cruiser Squadron, February 26 to May 5, 1904; *Isla de Cuba*, left the station March 4, 1904; *Paraguay*, recommissioned February 13, 1904; *Pampanga*,

recommissioned October 9, 1903; *Quiros*, placed out of commission January 30, 1904; *Samar;* tugs *Piscataqua* and *Wompatuck*.

Fleet auxiliaries (complements on merchant-ship basis).—Colliers *Ajax*, *Alexander*, *Brutus*, *Justin*, *Nanshan*, *Pompey*, *General Alava*, *Zafiro*.

VESSELS ACTING SINGLY.

Abarenda, collier, commissioned November 3, 1903, North Atlantic Station; *Adams*, training ship on Pacific coast until March 21, 1904; station ship at naval station, Tutuila, from May 16, 1904; *Alert*, training ship on Pacific coast until December 10, 1903; *Amphitrite*, attached to training station, Newport, until October 3, 1903, then to *Franklin* at Norfolk Navy-Yard for training purposes, station ship at Guantanamo from February 10, 1904; *Chesapeake*, midshipmen's practice ship, out of commission between September 13, 1903, and May 2, 1904; *Culgoa*, supply ship, North Atlantic Station; *Dolphin*, special service; *Eagle*, surveying duty, north coast of Cuba; *Glacier*, supply ship, North Atlantic Station, placed out of commission August 1, 1903, recommissioned December 15, 1903; *Gloucester*, assigned as station ship at Culebra February 19, 1904; *Hist*, tender to second naval district; *Iroquois*, station ship naval station, Honolulu; *Michigan*, special service on Great Lakes; *Mohican*, training ship on Pacific coast until April 19, 1904, arrived at Cavite June 27 to be station ship at Olongapo, *Monongahela*, store ship at Guantanamo from May 9, 1904; *Petrel*, temporarily detached from Pacific Squadron March 29, 1904, for special service at Kiska, Alaska; *Solace*, transport service, Mare Island, Honolulu, Midway, Guam, and Asiatic Station; *Supply*, station ship at Guam; *Sylph*, special service; *Vixen*, tender to station ship at Guantanamo; *Wasp*, tender to eighth naval district; *Wheeling*, station ship at naval station, Tutuila, until relieved by *Adams*, May 16, 1903, then en route home. Tenders of receiving ship *Franklin* at Norfolk Navy-Yard, for training of recruits; *Hornet*, *Restless*, *Siren;* *Yankton*, detached to similar service at Naval Training Station, Newport, R. I., August 8, 1904.

In brief, the fleet has been employed as follows:

On the North Atlantic Station, the commander in chief, with the Battle Ship Squadron, returning from a cruise to the Azores, arrived on the New England coast July 23, where all available vessels of the Caribbean, Coast, and Atlantic Training squadrons had been assembled. The squadrons combined and a search problem began soon afterwards.

Following this the assembled fleet proceeded to Long Island Sound, where they were reviewed on August 17, off Oyster Bay, by the President. The fleet then returned to the coast of Maine and was engaged in maneuvers with the Army from August 25 to 29.

With the exception of the Atlantic Training Squadron, the fleet then proceeded to Menemsha Bight for preliminary target practice, after which they dispersed generally for repairs.

In November a revolution in the State of Panama made it necessary to send a naval force to the Isthmus. Only one gunboat, the *Nashville*, at Colon, was present at the time of the outbreak, but the *Dixie* arrived at Colon with a battalion of marines in the course of a few days and the *Boston* soon afterwards at Panama. The force in the vicinity of the Isthmus was rapidly increased until it included the whole Pacific and Caribbean squadrons and three battalions of marines. The Canal Zone was thoroughly scouted and its coasts examined, involving much arduous work in a trying climate, but yielding valuable information and experience.

After the completion of their repairs the battle ships assembled at Tompkinsville and sailed December 1 for Guantanamo to take formal possession of the naval reservation conceded by the Republic of Cuba. This ceremony took place December 10, 1903.

Thence the squadron proceeded to Culebra and until the middle of February was engaged in exercises and maneuvers in that vicinity, most of the time under war conditions. In January they were joined by the South Atlantic Squadron.

The Admiral of the Navy, accompanied by the chief of the Bureau of Navigation as his chief of staff, made a visit of general inspection during the early part of March to the fleet assembled at Culebra, comprising the Battle Ship Squadron of the North Atlantic Fleet, the South Atlantic Squadron, and part of the Atlantic Training Squadron. The drills witnessed by the Admiral of the Navy included tactical exercises in which the Battle Ship Squadron and the South Atlantic Squadron (all cruisers) were maneuvered as contending forces.

Record target practice off Pensacola next occupied the various squadrons, except the Atlantic Training Squadron, which remained in the West Indies, making its base at Guantanamo and cruising in adjacent waters for the protection of American interests.

As soon as its target practice was completed the South Atlantic Squadron relieved the Caribbean Squadron at Colon, the latter proceeding to Pensacola.

The *Brooklyn* and *Machias* from the European Station arrived at Pensacola in the latter part of March, and as some reorganization of cruiser squadrons had become necessary in order to continue tactical work, and also for the purpose of equalizing the service on the several stations, as far as practicable, a new assignment of squadrons was made, taking effect March 28, 1904, by which the former Caribbean Squadron became the European, the former European the South Atlantic, and the former South Atlantic, which had already taken up its new duties, the Caribbean.

This interchange of cruiser squadrons is regarded as an additional means of effecting ready cooperation of the several squadrons of the North Atlantic and the two stations adjacent thereto. It is desirable to foster among ships and their personnel a feeling of identity with squadrons rather than with stations, as this will tend to promote the mobility of squadrons and facilitate the ready combination of two or more into a fleet.

Upon the conclusion of record target practice the North Atlantic Battle Ship Squadron and the new European Squadron proceeded on a cruise to Europe, stopping for coal at Guantanamo and St. Thomas, respectively, and coaling again at Fayal from naval colliers sent there for them.

From Fayal the battle ships proceeded alone, the European Squadron having been diverted to Tangier. Lisbon, Gibraltar, and Piræus were visited by the battle ships, in accordance with a general plan previously agreed upon with the State Department. This European cruise is to include visits to Austrian ports and return to the United States about September 1.

The Caribbean Squadron continued at Colon and vicinity until the latter part of May, when the force was reduced to one ship and one battalion of marines on shore. Meantime one vessel of this squadron had taken over naval affairs in Dominican waters previously left in charge of the Atlantic Training Squadron, which proceeded north. During June the greater part of the Caribbean Squadron was on the

coast of San Domingo, the insurrection in that country drawing to a close.

The Coast Squadron of the North Atlantic Fleet, organized only a short time before the beginning of the fiscal year, took part in the search problem and joint maneuvers, and the review by the President.

Certain alterations necessary to the three new monitors belonging to this squadron postponed work, in squadron, until March, at which time it joined the target practice rendezvous at Pensacola. After completing its practice the Coast Squadron assembled at Annapolis, and at the close of the academic year embarked the midshipmen for their summer cruise, spending the month of June in Chesapeake Bay.

The South Atlantic Squadron cruised on the east coast of South America, between the River Plate and Bahia, Brazil, until December, when it joined the North Atlantic Fleet at Culebra. This squadron's preliminary target practice was held at Ilha Grande. The good results of continued cruising and being in company with the flagship were very noticeable in this squadron at the time of the visit of the Admiral of the Navy to the fleet in March. He was favorably impressed with the skillful handling of these vessels in squadron formation.

The new South Atlantic Squadron after leaving Pensacola proceeded via San Juan on a cruise which would include visits at several African ports and bring the squadron on the coast of Brazil in the early autumn. Upon reaching Teneriffe, the squadron was ordered immediately to Tangier, where it remained pending settlement of the Perdicaris affair until the end of June.

The European Squadron, after a visit at Lisbon in July, 1903, proceeded to the Mediterranean for drills and exercises. August 28 the squadron was dispatched from Villefranche to Beirut for the protection of American interests, remaining in that quarter until February, 1904. During this period the vessels held preliminary target parctice singly near Port Said, and one of them, the *Machias*, conveyed a diplomatic expedition from Naples to Djibouti and returned to Port Said. An escort, made up from the squadron, composed of seamen and marines, all under command of Lieut. C. L. Hussey, U. S. Navy, accompanied this expedition into the interior, all arrangements for the trip having been made in advance by the same officer, who was detailed by the commander in chief of the squadron.

The new European Squadron remained in company with the North Atlantic battle ships most of the distance from Pensacola to the Azores, where a stop was made for coal, but from that point was diverted to Tangier, arriving June 1, and remained through the month.

The Pacific Squadron began the fiscal year with a six months' cruise to Alaskan waters, with the especial purpose of visiting the Kiska Islands and other harbors near by. The squadron then returned to the coast and prepared for further cruising, which would include Honolulu and ports on the Mexican and Central American coasts; but a revolution on the Isthmus of Panama required the presence of all the vessels of the squadron there until March. The flagship and three other vessels then made a short cruise to the southward as far as Callao. Returning to Panama in April, the flagship with three vessels began a cruise to Alaskan waters via Acapulco and Honolulu.

Two of these vessels parted company at Acapulco to be docked and make urgent repairs at Mare Island, rejoining their commander in chief at Honolulu the end of May. This squadron sailed for Kiska June 4, and returned to the coast at Bremerton June 28.

Of the vessels left at Panama, the *Wyoming* and two destroyers were ordered north about the middle of April, visiting Acapulco, Pichilinqui, San Diego, and other ports to the northward as far as Portland. The *Boston* was held at Panama until May 25, and then proceeded to Mare Island.

On the Asiatic Station, the commander in chief assembled off Chefoo as many vessels as could be spared for exercises in squadron and target practice, continuing until the latter part of September. The present organization of the Asiatic Fleet in squadrons was not perfected until October, by which time the larger vessels were in Japan and the gunboats preparing for their winter stations.

It had been intended to rendezvous in Manila Bay for squadron work in winter, as had been done during the previous winter, and at Chefoo during the summer; but instead of this the Department ordered the commander in chief to proceed, as soon as convenient, with the Battle Ship and Cruiser squadrons on a cruise to Honolulu. The squadrons passed a few days at Honolulu, then returned to the station via Guam, the Cruiser Squadron communicating also at Midway. The readiness with which all the instructions for this cruise were executed and the creditable performance of the vessels themselves evoked the hearty commendation of the Department.

After the arrival of the two squadrons in the Philippines the latter part of January, record target practice was held in Manila Bay.

Since the outbreak of hostilities between Russia and Japan in the northern part of the station, no large force has been near the theater of war, and the battle ships have cruised only as far north as the Yangtse River, being at Woosung at the close of the fiscal year.

One vessel wintered at Niuchwang, leaving there April 5, 1904, after the beginning of hostilities. Another was sent to Chemulpo late in December, 1903, when hostilities seemed imminent, to be ready to render such assistance to the legation and to American citizens as might prove necessary. Ever since then a vessel has been retained at or near Chemulpo and Chefoo to maintain communication and to provide for emergency.

REPAIR PERIOD FOR VESSELS IN COMMISSION.

During the past year the fleet as a whole has lost less time through being under repairs at navy-yards than it did the year before. With the exception of several vessels that had received injuries, the battle ships, when they go for repairs after the autumn target practice, will have had on this account no interruption of their being in squadron during ten months. The Bureau regards this as a good showing, but as the maintenance of high squadron efficiency requires that there should be no interruption, and as it is of course desirable that there should at all times be the maximum number of vessels of the various classes in readiness for immediate service, we should endeavor so to arrange that the vessels may go for repairs in rotation, say 20 per cent of each class at a time.

This 20 per cent assigned to navy-yards will take advantage of being

under repair and refitting for active service to give the necessary leave of absence and recreation to officers and men; as it must be recognized that tours of sea duty are to become more frequent and tours of shore duty less frequent and of shorter duration.

The order in which vessels should be withdrawn from the fleet for repairs should depend largely upon the recommendations of the fleet and squadron commanders who are in the best position to judge of a vessel's performance in company with others, and they can also see that the vessels designated for repairs make all possible preparation in advance, to facilitate and expedite the repair work.

It is believed that the practice of having so-called home navy-yards for the respective vessels, to which they will always be sent, when practicable, for extensive repairs (a plan which is understood to be favored by the bureaus responsible for the work), will also be desirable from the personnel point of view. With some degree of definiteness in regard to the time and place of periods of relaxation, as well as in regard to periods of active duty, it will be reasonable to expect a greater spirit of content in the necessary arduous labors of the fleet.

The foregoing applies principally to vessels on the North Atlantic and Pacific coasts, but a similar practice can to some extent be carried out on other stations.

TRAINING SQUADRON.

The operations of the Atlantic Training Squadron with the North Atlantic Fleet have been previously mentioned. The regular work of training has been carried on with good results, in spite of many difficulties and interruptions imposed by the exigencies of the Service. The increasing shortage of officers has made it necessary to withdraw several vessels from this squadron and place them out of commission, and a further reduction may prove necessary. There can be no doubt, however, that gathering the various training ships into a squadron has improved the character and uniformity of the training and treatment of recruits, thanks to the zeal and energy of the commander in chief of the Training Squadron.

On the Pacific coast it has been impracticable to form a training squadron, and it finally became necessary to place the three training ships out of commission. Their place will be filled for a time by the *Buffalo*, a vessel of the Atlantic Training Squadron on detached service.

MOBILIZATION AND CONCENTRATION OF SQUADRONS.

In continuation of the practice begun in the winter of 1902–3 of concentrating the squadrons of the North Atlantic, South Atlantic, and European squadrons annually for maneuvers, plans were prepared for a rendezvous at Culebra early in January, 1904. The plans embraced tactical exercises and evolutions of a character more advanced than those of the preceding year, and, as before, a search problem, in which the Atlantic Training Squadron also, composed of vessels of the cruiser type, were to take part. Subsequently the concentrated squadrons would move to Guantanamo as a base and be joined there by the Coast Squadron, after which the fleet would proceed to Pensacola, where the annual record target practice would be carried out before the visiting squadrons dispersed to their respective stations.

The requirements of service elsewhere, however, prevented carrying out more than a small portion of this programme, practically the entire force of the Caribbean Squadron being required at the Isthmus of Panama, and the European Squadron being detained on the coast of Syria until too late to join the other squadrons for any of the work prior to target practice.

The South Atlantic Squadron came north to the rendezvous in accordance with the programme, but part of it was immediately diverted to the coast of Santo Domingo, where also the presence of the Atlantic Coast Squadron was required for some time. The search problem and the greater part of the tactical evolutions had, therefore, to be omitted from the winter maneuver work of the fleet. But the Battle Ship Squadron carried out such part as it could, supplemented by the South Atlantic Squadron. The general inspection by the Admiral of the Navy, an important feature in connection with these concentrations, was carried out with satisfactory results.

TORPEDO VESSELS.

The First Torpedo Flotilla, under the command of Lieut. L. H. Chandler, U. S. Navy, consisting of the destroyers *Decatur*, *Bainbridge*, *Barry*, *Chauncey*, and *Dale*, was assigned to the Coast Squadron, North Atlantic Fleet, for the summer of 1903, taking part in the search problem and the joint maneuvers with the Army on the coast of Maine. Then, after being fitted out at the Norfolk Navy-Yard, this flotilla, under the convoy of the *Buffalo*, proceeded to the Asiatic Station, via the Suez Canal, making the passage in four months without noteworthy difficulty or delay en route.

The Second Torpedo Flotilla was organized during the summer of 1903 and assigned to the North Atlantic Fleet, being employed generally during the summer in the same manner as the first flotilla. After repairs at Norfolk and some cruising for exercise in Chesapeake Bay, this flotilla was sent in December, 1903, to the Gulf of Mexico, making its base for a great part of the time at Key West. Two of these destroyers were sent under convoy to Colon for service with the Caribbean Squadron, the whole flotilla being assembled again off Pensacola at the time of the rendezvous for target practice.

The majority of the remaining torpedo vessels on the Atlantic coast have been assembled at Norfolk in a Reserve Torpedo Flotilla, where they are cared for, taken out on practice runs, and generally kept in as good condition as the limited number of officers available for this duty allows. Several torpedo boats are stationed at the Naval Academy and at the Naval Torpedo Station for purposes of practice and instruction.

On the Pacific coast at the beginning of the year there was one destroyer in commission, the other torpedo vessels being in reserve and kept in serviceable condition under the supervision of the officer in command of the one destroyer in full commission and with the assistance of her complement. In December, 1903, another destroyer was ordered placed in commission, so that two might be sent to the Isthmus of Panama, where their services were needed. These two proceeded, under the convoy of the *Bennington*, to Panama without delay or mishap, and, notwithstanding the dispatch duty at Panama which the exgencies of the service imposed upon these two vessels, one

of them, the *Paul Jones*, under the command of Lieut. G. C. Davison, U. S. Navy, won the target practice trophy for the highest final merit of vessels in her class.

The great shortage of officers is nowhere more severely felt than in connection with the torpedo work in the Navy, both aboard the torpedo vessels and on board the larger ships. The proper development of the capabilities of this important weapon would require that all our serviceable torpedo vessels be organized in active cruising flotillas, fully officered and manned. This condition is not only the best for the preservation of the vessels themselves, but is absolutely essential to their efficient employment in time of war. The proper efficiency of the torpedo installation of battle ships also requires that an officer be available to devote his entire attention as a divisional officer to this duty. And, in turn, to fit officers for torpedo duties, they should have a course of training of from four to six months, which involves their withdrawal for that time from other duties.

NAVAL COLLIERS.

During the past year the naval colliers have been assigned to service as follows:

The *Ajax*, *Alexander*, and *Brutus* have been sent to the Asiatic Station, to be permanently attached to that station, in order that the movements of the squadrons might be free from embarrassment with regard to coal supply.

The *Justin*, *Nanshan*, *Pompey*, and *Zafiro* are also attached to the Asiatic Station, the last named being principally employed as a dispatch vessel and local transport.

The *Abarenda*, *Cæsar*, *Hannibal*, *Lebanon*, *Leonidas*, *Marcellus*, and *Sterling* have been employed mainly in connection with the North Atlantic Fleet. The *Abarenda*, *Hannibal*, and *Leonidas* were recently sent together to the Azores in advance of, and to meet, the Battle Ship and European squadrons en route from Guantanamo to Lisbon. Two colliers were emptied there, then returned to Lamberts Point, and were dispatched to Lisbon to recoal the battle ships before their return.

On the Pacific coast the *Nero* and *Saturn* have been assigned to the Pacific Squadron, the need for squadron colliers being very great on that station. Temporarily, the *Saturn* has been sent on special service in connection with the preliminary work of establishing a naval base at Kiska, Aleutian Islands.

The majority of these colliers are officered and manned on the same plan as merchant vessels under contract between the respective masters and the Navy Department, but the movement to replace these merchant crews with regular naval complements has gone forward as fast as the shortage of officers would permit. The *Abarenda* was placed in commission in the autumn of 1903 with a naval complement, and the *Marcellus* is about to be placed in commission similarly. These two vessels will carry men for training in addition to their regular complements. No more colliers can be manned by naval crews, however, until the demand for officers for regular naval needs is relieved, although the necessity for the change still exists.

In the meantime, since the change can not be immediately effected, considerable improvement has been brought about by the appointment

of an inspector of colliers, with headquartrs at Baltimore. This officer, Capt. Albert Ross, U. S. Navy, makes frequent inspections of all colliers, thoroughly investigating the masters' records and accounts as well as the condition of the vessels.

The mobility and efficiency of the squadrons is much improved by having colliers available to accompany them wherever they may be sent, as has been repeatedly shown during the past year. The *Alexander*, while en route to the Asiatic Station, was stopped at Port Said and sent to the coast of Syria, by which means the vessels of the European Squadron replenished their coal supply without leaving port, thus being able to remain continuously where their presence was needed.

For a squadron to coal at sea, or be able to make an intermediate port, replenish coal supply promptly from its own colliers and proceed, with freedom from the delays and uncertainties incident to obtaining coal from local dealers, is an important advantage too evident to require further explanation. In this connection it is interesting to note in the report of the commander in chief of the North Atlantic Fleet that the Battleship Squadron coaled at sea from the three colliers that accompanied them on the visit to the Azores last summer, several vessels of the squadron arriving in port with more coal in their bunkers than they had on sailing from Tompkinsville.

Of the six squadron colliers recommended last year to be built upon plans prepared by the Navy Department, two have been appropriated for. Before the completion of these vessels the need of squadron colliers will have greatly increased, because nearly all the new vessels coming on are large, and squadrons composed of them will require coal in considerable quantities at one time. It is therefore recommended that the need of more colliers of this type be considered when appropriations for more vessels are asked for.

VESSELS ON SPECIAL SERVICE.

The *Mayflower* returned from a cruise to the Azores with the Battle Ship Squadron, North Atlantic Fleet, in the middle of July, and was employed generally in connection with that squadron until, in early November, she was sent to Colon, temporarily attached to the Caribbean Squadron. In February and March she was employed as flagship for the Admiral of the Navy during his visit of inspection to the fleet in West Indian waters, and afterwards she was again attached to the Battle Ship Squadron, North Atlantic Fleet, for a cruise to the Mediterranean.

The *Michigan* has been, as heretofore, employed on duty on the Great Lakes, including cruising with the Naval Militia.

The *Eagle* has been engaged in surveys of certain harbors on the north coast of Cuba, beginning with Bahia Honda, the site of a naval reservation.

The *Dolphin* has been employed in her regular duties as a dispatch vessel, particularly on the Atlantic coast, but whenever it has been practicable she has been given an opportunity to carry out drills and exercises for an extended period in places favorable for such work. This vessel won the trophy for the highest final merit at target practice among vessels of her class.

The *Solace*, as heretofore, has performed transport service between San Francisco, Honolulu, Midway, Guam, the Philippine Islands, and the coast of China.

APPOINTMENTS, RESIGNATIONS, RETIREMENTS, DEATHS, ETC.

During the fiscal year ending June 30, 1904, there were 24 deaths in the active list of officers and 30 on the retired list. There were 41 retirements and 23 resignations (exclusive of midshipmen); 5 officers were dismissed, 1 was discharged, and 1 appointment was revoked.

During the year there were the following original appointments: 26 assistant surgeons, 9 acting assistant surgeons, 34 assistant paymasters, 2 chaplains, 2 assistant civil engineers.

Six young officers were assigned to the construction corps, which will increase that corps to 49; and it is expected that 8 more will be assigned during the coming year. Arrangements have also been made to assign 8 ensigns or lieutenants (junior grade), to special ordnance instruction and duty on shore, and a similar number to special duty under the Bureau of Steam Engineering. This will remove 22 junior line officers from active sea duty during the ensuing year.

On June 30, 1903, there were 1,063 active officers of the line in the Service, including midshipmen at sea; and on June 30, 1904, there were 1,080, or an increase of 17.

On June 30, 1903, there were 483 officers of the staff corps on the active list; and on June 30, 1904, there were 541, or an increase of 58.

The law increasing the number of warrant officers to be appointed ensigns from 6 to 12, and reducing the period of service required as warrant officers from six to four years, has resulted in a much larger number of candidates, 23 having applied to take the examination on July 30 of this year. During the year just completed 4 warrant officers took the examination, 2 of them being successful in obtaining commissions as ensigns.

OFFICERS FOR SPECIAL STUDY.

The Department has approved a joint recommendation by the chiefs of the Bureaus of Ordnance, Steam Engineering, and Navigation for the detail of a number of officers of subordinate grades, who should have indicated the necessary aptitude, for special instruction in ordnance and engineering subjects. These officers will not constitute a separate corps and will continue their regular duties of the line, but when on shore they will first be assigned to such duty as will thoroughly ground and advance them in the respective specialties, and for those demonstrating the necessary abilities subsequent details on shore duty will be so arranged as to utilize to the best advantage their sea experience and previous study, and also to promote their further progress along the chosen lines.

In addition to the details made at the beginning, it is the intention to make additional details yearly of four in each of the branches named. This makes another difficulty in filling the demands for officers; but the need is not a new one. It has long existed, and meeting it can not be further postponed.

ADDITIONAL ASSISTANTS TO BUREAU.

I beg to invite attention to the necessity for two more assistants to this Bureau, the assistants to be legally empowered to act with the authority of the Bureau in such matters as may be deputed to them by the chief of the Bureau with the approval of the Secretary of the Navy. This recommendation is made in order to keep pace with the increase of the work due to the growth of the Navy. At the present time it is impossible for the chief of Bureau to give due attention to all of the work of the Bureau which must now come before him for action; and unless the chief of Bureau be relieved from the routine details of administration it is impossible for him to devote the necessary attention to more important matters concerning the fleet and other duties of his office.

DISCRIMINATION IN PAY AGAINST NAVAL OFFICERS ON SHORE.

The Bureau earnestly recommends, as a matter of simple justice to officers of the Navy, the repeal of that provision of the Navy personnel act of March 3, 1899, which makes a 15 per cent reduction of pay for naval officers on shore duty. Officers of the Army and Marine Corps receive full pay while on shore, but officers of the Navy serving side by side with them receive 15 per cent less pay—a hardship which naval officers have good reason to regard as an unjust, unmerited discrimination against themselves.

PROMOTION OF WARRANT MACHINISTS.

Under existing law, boatswains, gunners, carpenters, and sailmakers are, after six years' service as warrant officers, promoted to chief boatswains, chief gunners, chief carpenters, and chief sailmakers, to rank with but after ensign, but no provision is made for the similar promotion of warrant machinists. The Bureau recommends that Congress be asked to provide for such promotion for warrant machinist, to rank with but after ensign, under the same restrictions as are now imposed upon boatswains, gunners, carpenters, and sailmakers.

This recommendation raises the question of a suitable title for warrant machinists so promoted; and as "chief warrant machinist," besides being cumbersome, would be inappropriate, since these officers when promoted are no longer warrant officers, it is recommended that the title "machinist" be substituted by law for that of "warrant machinist." Then on promotion, as provided for chief boatswains, etc., machinists would become chief machinists.

This substitution involves a change in the designation of certain ratings of petty officers, namely: Chief machinist to become chief machinist's mate; machinist, first class, to become machinist's mate, first class, and machinist, second class, to become machinist's mate, second class. These changes can be effected by Executive order, and are recommended to be made for the sake, also, of uniformity with the designations of other ratings, such as chief boatswain's mate, chief gunner's mate.

CHIEF BOATSWAINS, ETC., TO BE ELIGIBLE FOR PROMOTION TO ENSIGN.

The provisions of the last appropriation act "that boatswains, gunners, carpenters, and sailmakers shall be eligible for appointment as chief boatswains, chief gunners, chief carpenters, and chief sailmakers after six years from date of warrant" has had the effect of disqualifying certain of these officers for appointment to the grade of ensign in the Navy, as it has been held that chief boatswains and chief gunners are not eligible under the existing law for such appointment. The Bureau believes that this was not the intention of the act and recommends, therefore, that Congress be asked to provide for the appointment of chief boatswains and chief gunners (also the proposed chief machinists) to the grade of ensign, under the same restrictions imposed by the existing law upon boatswains, gunners, and warrant machinists.

One gunner, who by the operation of the above-mentioned law will be promoted to the grade of chief gunner this summer, has informed the Bureau that it is his desire to take the examination to determine his fitness for appointment as ensign in the Navy next year, but if promoted to the grade of chief gunner he will not be eligible.

PAY OF WARRANT OFFICERS WHEN COMMISSIONED TO BEGIN ON DATE OF PROMOTION.

The Comptroller of the Treasury has decided that boatswains, gunners, carpenters, and sailmakers promoted to the grade of chief boatswain, chief gunner, chief carpenter, and chief sailmaker are entitled to the pay of the higher grade only from the date upon which the Department issues their commissions. The law requires that these officers be examined by a board composed of three officers of the grade to which they are to be promoted, and in a great many cases warrant officers who are entitled to promotion are serving at isolated stations, where it is impossible to organize a board; in fact, the only place where a board of this character can be organized is at certain stations along the North Atlantic coast.

With only enough warrant officers to meet the requirements of the Service, it will not be practicable to bring all of these officers to the Atlantic coast for this examination for perhaps two or three years. There are officers now attached to the different fleets whose cruises are just beginning and who will not return home in the ordinary course for three years, and it seems a hardship to deprive them for so long a period of the benefits of the promotion to which they are entitled; and it would be a great expense to the Government to bring them all to this coast for examination, even if their services could be spared from their respective stations long enough for that purpose.

In view of these facts, the Bureau recommends that the Department ask for such legislation as will entitle all officers to the pay of the grade to which they are promoted from the date from which they take rank, and that this provision be made to apply to all officers who shall be promoted to a higher grade under the provisions of existing laws.

TRAINING OF ENLISTED PERSONNEL.

APPRENTICES.

Work on the new barracks now being constructed at the training station, Narragansett Bay, is progressing favorably, and it is expected that the buildings will be ready for occupancy some time next winter. Various improvements have been made in the accommodations of the station, as noted in the annual report of the commandant. The stationary training ship, the *Constellation*, having been found to be in a very bad condition—her masts rotten, decks leaking, and a general overhauling necessary—was sent to the navy-yard, New York, for repairs on June 11, 1904. It is intended to send the *Reina Mercedes* to the station when ready to provide additional accommodation, the *Constellation* to return also when repaired. During the last two months of the year the *Hist* has been used daily for the instruction of apprentices in steering, heaving the lead and log, lowering boats, etc., and has been of much value.

Profiting by the experience of last year, every effort has been made to keep the health of the station in the best possible condition, with satisfactory results. Owing to the limited facilities for housing the apprentices and to the fact that there are at the present time but a small number of training ships, it was found necessary to discontinue the enlistments of apprentices on April 6, as experience has shown that the outbreaks of contagious diseases were largely due to overcrowding.

The training station, San Francisco, has been utilized during the past year for the training of landsmen and apprentices.

On January 1, 1904, the minimum age for the enlistment of apprentices was raised to 16 years, and it is expected that good results will follow this change.

The Bureau has recommended to the Department that the systems of training for landsmen and apprentices be merged into one general system as soon as practicable and that the designation of rating for all enlisted persons under training for the seaman branch be changed by Executive order to the general designation, "Apprentice seaman," with a minimum age for enlistment of 17 years.

The vessels now used for the training of apprentices are the *Topeka* and *Hartford*. The latter vessel, however, is not available during the summer months, her services being needed for the practice cruise of the midshipmen.

LANDSMEN.

Landsmen for training have been assembled and given preparatory instruction prior to being drafted to cruising training ships at the navy-yards at League Island and Norfolk, and at the training station at Yerba Buena Island, Cal.

At League Island they are quartered in temporary barracks and on board the *Lancaster;* at Norfolk, on board the *Richmond*, the *Franklin*, and in temporary barracks, and at Yerba Buena in permanent barracks.

At the training stations on shore their course of instruction is limited to three months, during which they are taught care of person,

clothing, and bedding, handling of boats, infantry drill, small-arms firing, compass, helm, and lead, and are drilled in loading 4-inch or 5-inch B. L. R. dummy charges, and pointing. Short trips in tugs or converted yachts are so arranged that each division shall have at least one trip while at the station. On these trips they are required to take the helm, heave the lead, etc., and are instructed in anchoring and getting underway.

* * * * * * *

SUBMARINE BOATS' CREWS.

Men have been constantly under instruction on board the submarine boats, and all the vessels now have well-trained crews, who have become fairly expert in the handling of the vessels.

GUNNERY AND SMALL-ARMS TRAINING.

The success of the present system of training gun pointers and gun crews, which was tested in respect to the result produced on accuracy of fire by the pointers of the Battle Ship Squadron of the North Atlantic Fleet, at Pensacola, Fla., in April, 1903, was amply confirmed by the results of the annual record target practice of all vessels in the Navy, held in the spring of this year, which showed a marked improvement not only in accuracy, but particularly in rapidity; and it is gratifying to note that the most marked increase in efficiency has been that of the most important guns, namely, guns from 8-inch to 13-inch caliber, installed in turrets.

In accordance with the plans outlined last year, the three squadrons of the North Atlantic Fleet were assembled, with the European and South Atlantic Squadrons, at Pensacola, Fla., during March and April; and, in the same manner, the Asiatic Fleet and the Pacific Squadron each carried out the record practices of all the vessels of the same squadron on the same target ground. The record target practice was for the purpose of testing and qualifying the gun pointers of the various classes of guns.

By direction of the President three suitably designed bronze plaque trophies were provided for the winning vessels of the battle-ship, gunboat, and torpedo classes. The President has also ordered that extra pay of from $2 to $10 per month, according to class of gun, be given to all gun pointers making certain scores, to be determined by the Secretary of the Navy. These inducements, combined with uniformity in the rules and conditions under which the practice was held, have produced a keen and loyal competition, extending from the commanders in chief of fleets to the individual men of the gun crews, which has enlisted a degree of skill, intelligence, and dexterity of the entire personnel that has produced results which, it is believed, could not have been so completely realized by any other method that did not include the spirit of fair competition to the same extent. These results have been produced without any increase in the expenditure of ammunition.

Small-arm instructions have been printed and issued to the naval service, which are as similar to those in use in the Army as the differences in the requirements of the Navy will permit. The requirements

for qualifying are similar to those for men of the coast artillery—that is to say, all men are to qualify on ranges up to 300 yards, though sharpshooters will qualify up to 600 yards.

Rapid progress has been made within the past year in establishing small-arm target ranges and target galleries at all training stations, within reach of receiving ships, and on the various stations, within reach of the places selected for assembling squadrons for great-gun target practice. Excellent ranges, fitted with all necessary requirements, are practically completed at the navy-yard, Mare Island, Cal.; the training station, Coasters Harbor Island, Newport; the navy-yard, Pensacola, Fla.; the Naval Academy, Annapolis, Md.; the naval stations at Cavite, P. I., and Culebra, West Indies; while ranges have been authorized and are now in process of construction at the navy-yard, Norfolk, and at the naval stations at Guantanamo and Olongapo, and others are now under construction at the navy-yards at Portsmouth, N. H., and Charleston, S. C. A protected small-arm shooting gallery has been authorized for the navy-yard, New York.

NATIONAL RIFLE COMPETITION.

Steps were taken in the summer of 1903 to organize for the first time a rifle team to represent the Navy in the matches to be shot at Sea Girt, N. J., under the auspices of the National Rifle Association of America, and especially to compete in the National Trophy match held on September 8 and 9, 1903, the competition being open to teams of 12 men each from the Army (one team from the troops stationed within each of the military departments) the Navy, the Marine Corps, the National Guard of uniformed militia, one team from each State, Territory, and the District of Columbia. The distances shot over were 200, 500, 600, 800, 900, and 1,000 yards, United States service arms and ammunition being used.

Men were selected from the various ships of the North Atlantic Fleet and sent to Sea Girt, N. J., for practice. Fifteen teams competed for the national trophy, the Navy team standing thirteenth. This low standing is largely accounted for by the fact that none of the Navy team had ever fired at long ranges previous to the practice and this competition was their first match. Moreover, little or no opportunity had been afforded the men selected for rifle practice.

In all the other matches in which the Navy team entered their standing was satisfactory.

For the competition of 1904 men were selected from various ships and stations in June of this year and sent to Creedmoor, N. Y., for practice preliminary to the national match to be held at Fort Riley, Kans., in August.

Nineteen teams competed for the national trophy. The Navy team stood second, being excelled only by the New York National Guard team. Considering the small amount of small-arms target practice that is possible in the Navy, this result is particularly gratifying. In the national individual match, in which 197 men competed, a navy man came out fourth.

RECRUITING.

In addition to the recruiting which was carried on at the various receiving ships and at the following permanent recruiting stations.

Boston, Mass.; New York, N. Y.; Buffalo, N. Y.; Philadelphia, Pa.; Baltimore, Md.; Chicago, Ill.; and San Francisco, Cal., there were four traveling recruiting parties in the field, which practically covered the whole United States. The number of men in the Navy reached the maximum for the year in April—30,753.

Again, as during the preceding year, enlistments had to be suspended owing to overcrowded conditions on board receiving ships and in the temporary barracks that had to be thrown up to house the recruits.

Citizenship.

		Per cent.
Petty officers [a] (8,729).	Men (8,301):	
	Native born	74.0
	Naturalized	20.0
	Declared intentions	4.5
	Aliens, residents of United States	.6
	Aliens, nonresidents	.3
	Citizens of the United States	95.0
	Apprentices (428):	
	Native born	94.4
	Foreign born	5.6
Enlisted men other than petty officers (20,592).	Men, including landsmen for training and natives of colonial possessions (16,677):	
	Native born	78.7
	Naturalized	7.3
	Declared intentions	7.2
	Aliens, residents of United States	2.0
	Aliens, nonresidents	3.0
	Natives, colonial possessions	1.8
	Citizens of United States	86.0
	Apprentices (3,915):	
	Native born	95.0
	Foreign born	5.0

Nearly all the foreign-born apprentices are entitled to be classed as citizens of the United States under the laws relating to naturalization.

Citizenship of the total enlisted force (29,321):	Per cent.
Native born	80.0
Naturalized	11.0
Citizens of United States	91.0

Discharges, desertions, and deaths.

	Petty officers.	Men.	Apprentices.	Total.
Discharges:				
Expiration of enlistment	1,977	1,864	426	4,267
Disability	113	784	266	1,163
Executive or Bureau order	21	30	18	69
Own request		42		42
Bad conduct	52	426	125	603
Illegal enlistment		5	1	6
Inaptitude	9	85	160	254
Undesirability	57	446	311	814
Purchase		1		1
Total	2,229	3,683	1,307	7,219
Desertions [b]	528	3,439	521	4,488
Deaths	20	106	6	132

[a] About 600 of the petty officers entered the service as landsmen for training; 428 petty officers are under enlistment as apprentices; 21 petty officers are natives of colonial possessions.

[b] The percentage of desertions is 0.1 of 1 per cent in excess of last year, or 15.6 per cent.

DESERTIONS.

The percentage of desertions for the past fiscal year is included among the tabulated data regarding enlisted men.

Strict attention has been paid to the causes of desertions, and every condition that in the past has seemed to have a tendency to cause desertions has been carefully investigated, and whenever possible, ameliorated. Poor quality or inadequate quantity of food can not now be a contributing cause, for the operation of the general mess has been most successful, providing at all times an abundance of palatable and wholesome food. The physical condition of the men is in itself a confirmation of this statement.

Every opportunity consistent with efficiency and naval discipline has been taken advantage of to grant liberty. Desertions arising from a feeling of too much restraint are, therefore, among men predisposed to dissatisfaction, concerning whom it is doubtful whether any proper treatment would conduce to their contentment in the service. In general it may be said that the causes of desertions are to be looked for among the men themselves, rather than in the conditions obtaining aboard ship.

BARRACKS FOR RECRUITS.

During the past year the necessity for large and sanitary barracks for the accommodation of recruits has been most imperative.

The enlisted personnel of the Navy is steadily increasing in numbers, and means must be provided for the proper handling of recruits. To this end, and to keep pace with the growing needs of the service barracks should be built that will accommodate 5,000 men, and at the same time offer every facility for the preliminary training that is absolutely necessary to be given recruits before they are sent to cruising ships.

In selecting the location of barracks, efficient sanitation is a most important consideration. It is the opinion of the Bureau that there should be one barracks with a capacity of 2,000 in the vicinity of Chesapeake Bay, and one of like capacity at another point on the Atlantic coast where the climatic conditions are such as will permit of necessary drills and exercises, incident to proper training, to be conducted without interruption throughout the year.

The enlistment of recruits must go on, and the experience of the Bureau in the past has been that the sickness that has existed at stations to which recruits have been sent has been due entirely to overcrowding, and bad sanitation in consequence. The several receiving ships to which many recruits are sent are old, very inadequate in capacity, and can not satisfy the pressing demands of the service for suitable quarters for the housing and training of recruits.

Makeshift expedients, such as temporary barracks, should not be resorted to any longer than absolutely necessary. The construction of buildings commensurate with the service needs should begin at the earliest possible moment.

NAVAL RESERVE.

The subject of the formation of a naval reserve has been carefully considered by the Bureau, with the result that the Department has recommended to Congress a bill for enactment into law providing for a reserve not to exceed 20,000 men, of which 600 shall be commissioned officers. According to the plan recommended by this Bureau, this reserve would consist of persons of seafaring life and others qualified by actual experience, and of graduates of the Naval Academy, all to be enrolled and subject to call of the National Government when needed for service in time of war or when war is imminent, and to receive certain yearly training to fit them for such Government service.

NAVAL ACADEMY.

Capt. Willard H. Brownson has been superintendent throughout the entire year.

The construction of the new buildings has made satisfactory progress.

The Coast Squadron was utilized this year for the midshipmen's practice cruise the same as last year, the increased number of midshipmen making it no longer possible to send them in one vessel. As the Coast Squadron includes battle ships, monitors, vessels with sail power, and destroyers, the cruises have been so divided that the midshipmen would have experience in each type as far as practicable. Where so many are under instruction in proportion to the number of instructors, as is the case during the academic year, the best results can not be reasonably looked for, but experience in squadron early in their career must have a good effect on the midshipmen.

Steps are further taken to improve the character of the practical instruction of the midshipmen during that part of their time which is spent at the academy. There has been a lack of suitable vessels for instruction purposes at Annapolis, especially in torpedoes and gunnery, but it is hoped that one or more vessels of the Coast Squadron may be stationed there during the fall and spring to help out in the drills of the midshipmen.

NAVAL WAR COLLEGE.

Capt. (now Rear-Admiral) F. E. Chadwick was president of the War College until November 16, 1903, when he was relieved by Capt. C. S. Sperry.

It is a noteworthy step in advance to have brought into the conferences and discussions at the college a number of flag-officers. Certain questions have been submited for their especial consideration. The rise in the influence of the college is a great benefit to the Navy, and its work becomes of increasing value.

Respectfully submitted.

GEORGE A. CONVERSE,
Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT OF THE CHIEF OF THE BUREAU OF ORDNANCE.

DEPARTMENT OF THE NAVY,
BUREAU OF ORDNANCE,
Washington, D. C., October 1, 1904.

SIR: I have the honor to submit the annual report of this Bureau for the fiscal year ending June 30, 1904.

Rear-Admiral Charles O'Neil, U. S. Navy, who was Chief of the Bureau at the date of the last report, was placed on the retired list through the operation of law, March 15, 1904. He was succeeded by Rear-Admiral G. A. Converse, who, in turn, upon his appointment as Chief of the Bureau of Navigation, was succeeded by the present Chief of Bureau, August 3, 1904.

The present Chief of the Bureau, after but two months' service as such, can not claim credit for any of the work accomplished during the past year. This credit is due to the wise administration of his predecessors.

During the preceding year, since the last annual report of the Bureau, its work has been concerned in preparing the ordnance and armament equipments of vessels nearing completion, in making repairs or advisable modifications in the ordnance outfits of ships in service, and in making authorized improvements at navy-yards and stations.

The ordnance outfits of the *Cleveland*, *Denver*, *Des Moines*, and *Tacoma* have been completed, and these vessels have been commissioned.

The outfits for the sister ships *Chattanooga* and *Galveston* are practically finished, the slides of the 5-inch mounts being delayed in order to fit an improved sight mounting.

For the battle ships of the *Virginia* and class the 12-inch guns have been completed and the 12-inch mounts are about 50 per cent finished. All features of both the gun and mount are settled and nothing intervenes to cause delay with respect to this caliber of guns and mounts for these vessels. Their 8-inch guns and mounts are not so well advanced. Two of these guns, which are of 45-caliber length, have been assembled and are being fitted with breech mechanisms. Their 8-inch mounts are very well advanced, their state of completion varying from 25 to 75 per cent.

For the *Louisiana* and class the first 12-inch gun has been assembled and finish bored and turned. Three others are partially assembled, and the forgings for three more guns are about 85 per cent machined. The 12-inch mounts for these vessels have not yet been touched. The 8-inch turret guns and mounts for these ships will be furnished by the Midvale Steel Company, which has made satisfactory progress. Similarly, the first three vessels of this class will receive their 7-inch battery from the guns and mounts now building by the Bethlehem Steel Company.

For the *Pennsylvania* class of armored cruisers, nineteen 8-inch guns are completed and the twenty-four required for these vessels will be finished in the next three months. Their 8-inch mounts are 90 per cent completed, and should be ready for the ships in five months. The work on the 6-inch battery of these vessels is progressing, and no delay will probably be caused to the ships on account of the unreadi-

ness of guns of this caliber. Of the 6-inch mounts, the *Colorado* has been supplied, and those for the *West Virginia* are nearing completion. Pivot stands for the *Pennsylvania*, *Maryland*, and *California* have been furnished.

For the *St. Louis* class there will probably be a delay in the readiness of their 6-inch batteries, owing to the congested condition of the work at the Naval Gun Factory. The gun forgings for the main batteries of all vessels authorized have either been supplied or contracted for, down to and including those for the battle ships *Idaho* and *Mississippi*.

Forgings for the battle ship *New Hampshire* and armored cruisers *Montana* and *North Carolina* have not been contracted for, but proposals will soon be made for their purchase.

Nine sets of 10-inch forgings for the guns of the *Tennessee* class have been obtained and one 10-inch 40-caliber gun is about completed, and one type mount for the 10-inch gun has been ordered made.

New 5-inch batteries for the *New York*, *Albany*, and *New Orleans* have been contracted for with the Bethlehem Steel Company, as has also the 6-inch battery for the *Newark*.

The *Chicago* has had her battery overhauled and fitted with improved training gears and pivot-bar sights.

Twelve pedestal mounts for the 6-inch guns, with latest modifications and new sights, have been ordered at the Washington Navy-Yard, to be available for substitution on any ships first available which have the old style gravity-return mounts. These ships are the *San Francisco*, *Concord*, *Bennington*, and *Petrel*.

The 6-inch mounts of the *Texas* have been fitted with new training and elevating gears, but still lack improved sights.

The 6-inch mounts for the *Yorktown* are now being prepared with new operating gears and with pivot-bar sights.

The 6-inch mounts for the *Maine*, *Missouri*, and *Ohio* will require to be fitted with the improved sights as soon as these can be furnished, and this work will be done as fast as one set of sights is completed and the ship is available for making the substitution.

The battery of the *Kentucky*, which recently returned from service on the Asiatic station, has been overhauled and her 5-inch mounts will be fitted with latest arrangement of training and elevating gear and pivot bar sights. One of her 13-inch guns, No. 18, which had been injured probably through the explosion of shell in the bore, has been replaced by a sound gun.

The 4-inch mounts of the *Arkansas* have been modified to take the latest arrangement for training and elevating, and four additional mounts of this same type are being prepared at the Washington Navy-Yard for substitution on the next available monitor.

The Naval Gun Factory has been running night and day at full capacity, and, although good progress has been made, the congested condition of all work there gives assurance that its capacity is being overtaxed and must, unless this capacity is materially increased, eventually result in failure to supply the ordnance outfits of ships in time to meet the demands of the contractors.

Good progress is being made upon the manufacture of eleven of the twenty-four 8-inch guns for the Navy by the Watervliet Arsenal, and upon guns and mounts being made by private firms.

Since the last annual report the Bureau has entered into contract with the Midvale Steel Company for 12 additional 8-inch guns and mounts, making, in all, 36 guns and mounts of this caliber which that company has in hand for the Navy.

NAVAL GUN FACTORY.

Capt. E. C. Pendleton, U. S. Navy, remains in charge of this establishment. Under his very efficient management the work of the gun factory has proceeded as during the previous year, under full capacity of the plant, working day and night.

The guns of 3-inch caliber and above required for ships building or authorized are shown in the following tables:

No.	Class.	12-inch.		10-inch.		8-inch.		7-inch.		6-inch.		4-inch.		3-inch.	
		Number.	Length (calibers).	Number.	Length (calibers).	Number.	Length (calibers).	Number.	Length (calibers).	Number.	Length (calibers).	Number.	Length (calibers).	Number.	Length (calibers).
	BATTLE SHIPS.														
5	Virginia	20	40	.....	.....	40	45	.....	.....	60	50	.....	.....	70	50
2	Louisiana	8	45	.....	.....	16	45	24	45	.....	.....	.....	.....	44	50
3	Vermont	12	45	.....	.....	24	45	36	45	.....	.....	.....	.....	66	50
2	Idaho	8	45	.....	.....	16	45	16	45	.....	.....	.....	.....	24	50
1	New Hampshire	4	45	.....	.....	8	45	12	40	.....	.....	.....	.....	22	50
	Total	20 32	40 45	.....	.....	104	45	88	45	60	50	.....	.....	226	50
	ARMORED CRUISERS.														
6	Pennsylvania	.....	.....	.....	.....	24	40	.....	.....	84	50	.....	.....	120	50
2	Tennessee	.....	.....	8	40	.....	.....	.....	.....	32	50	.....	.....	44	50
2	Montana	.....	.....	8	40	.....	.....	.....	.....	32	50	.....	.....	44	50
	Total	.....	.....	16	40	24	40	.....	.....	148	50	.....	.....	208	50
	PROTECTED CRUISERS.														
3	St. Louis	.....	.....	.....	.....	.....	.....	.....	.....	42	50	.....	.....	54	50
	GUNBOATS.														
2	Cumberland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	40	.....	.....
2	Dubuque	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	40	.....	.....
	Total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	40	.....	.....
	Grand total	20 32	40 45	16	40	24 104	40 45	88	45	250	50	24	40	488	50

Of the fifty-two 12-inch guns required, the twenty for the *Virginia* and class have been completed. Six of the 45-caliber guns are being machined, and the forgings for twenty-two of the remaining guns of this type have been ordered and partial deliveries made. Forgings for four 45-caliber guns have yet to be ordered for the armament of the *New Hampshire*. Nine 10-inch guns are under construction. The forgings for guns of this caliber for the *Montana* and *North Carolina* have yet to be ordered. Of the one hundred and twenty-eight 8-inch guns required, twenty-four 40-caliber guns for the *Pennsylvania* class of armored cruisers are nearly completed, fifteen being finished and the remainder about three months from completion. Of the 45-caliber 8-

inch guns, the Naval Gun Factory will manufacture 44, the Army Gun Factory 24, and the Midvale Steel Company 36. At the Naval Gun Factory 2 of these guns are nearly finished and 20 more are in various stages of manufacture. Eighty-eight 7-inch guns are required. Of these the Naval Gun Factory will make 16, Watervliet Arsenal 24, and the Bethlehem Steel Company 36. One gun has been completed at the Naval Gun Factory and twelve guns are well under way. Twelve sets of 7-inch forgings are yet to be ordered. Of the two hundred and fifty 6-inch 50-caliber guns required, those for the *Pennsylvania* and class of armored cruisers have been completed, and one hundred and forty-four guns required for the battle ships of the *Virginia* and class, and the armored cruisers of the *Tennessee* and *St. Louis* classes are in course of manufacture. Thirty-two sets of forgings have yet to be ordered.

All vessels building and authorized require for their armament four hundred and eighty-eight 3-inch 50-caliber guns. One hundred and twenty-five of these were provided for at the time of the last annual report, and further orders were suspended, pending the development of an efficient semiautomatic gun of this caliber. No semiautomatic guns have yet been delivered under the Bureau's orders placed with private parties, and, in order to avoid delay, the Naval Gun Factory has been directed to begin the manufacture of 100 additional guns and mounts. Proposals for the forgings to carry out this order will be issued at once.

Besides the regular work on the new batteries of ships building, the Naval Gun Factory has done a vast amount of work in alterations and repairs to the ordnance material in service.

Experimental sight mechanisms and other devices for test and development have been made. New ammunition hoists, rails, handling cars, etc., for the handling room of turrets for the battle ships *Indiana* and *Massachusetts* have been completed, and those for the former vessel have been shipped. Similarly, new and improved ammunition supply arrangements have been made for the 12-inch turrets of the *Monterey* and shipped to that vessel.

The Bureau invites attention to the very complete report of the Superintendent of the Naval Gun Factory to be found in the appendix.

POWDER.

Black powder for ignition and saluting purposes and for filling shell is still used, but its manufacture for other purposes has been wholly discontinued.

All brown powder has been withdrawn from service and replaced with smokeless powder. It will be held in reserve for the present, but an endeavor is being made to dispose of it to powder manufacturers, who may be able to use with profit some parts of its constituents for commercial purposes.

Cordite, which was purchased during the Spanish war, has been withdrawn from service and will eventually be destroyed, as soon as the guns of foreign make, which alone now use it, have been replaced by guns of our navy pattern. Cordite has not proved satisfactory. Its ballistics are uncertain, and it is, in addition, objectionable on account of its great erosive effect on the bores of guns.

The manufacture of smokeless powder during the past year has in the main progressed satisfactorily, and about 800,000 pounds more has been delivered than during the preceding year. In addition there have been manufactured several thousand pounds of experimental powder of differnt forms of grain.

Every effort has been made to secure an improved, uniform, and standard quality of smokeless powder from all manufacturers, and powder makers have made marked progress in meeting the Bureau's requirements. Manufacturers have been discouraged from increasing the quantity of their output when improvement in its quality was considered more desirable.

The Bureau has especially directed its efforts toward securing a smokeless powder of uniform and constant ballistics to remain unchanged after long storage on board ship or in magazines on shore. Some of the powders of early manufacture still continue to give a heat test lower than the present standard, and some indices, on account of their continued low stability test, have been withdrawn from service and destroyed. The question of chemical stability of the powder as manufactured at present is, however, no longer a matter of concern to the Bureau, and it is confidently believed that the standard of purification is now wholly sufficient to warrant this sense of security.

Much has yet to be learned in regard to the relation between the velocity, pressure, and weights of charge, but such knowledge will come with greater experience in the use of this powder in service and in continuous experimental work. Owing to the Bureau's decision to reduce the muzzle velocities assigned for old guns to brown powder velocities for the same guns all powders in service had to be fired again at the naval proving ground for new assignment of weights of charge. In carrying out this work much valuable information has been obtained which otherwise might not have come to the Bureau's attention for years.

The price of smokeless powder remains unchanged, namely, 70 cents per pound, the Government supplying the alcohol used. As heretofore, there is virtually no competition among the private manufacturers.

The normal output at present of all private powder factories and of the Government factories at Indian Head and Newport is not greater than required to meet the demands of service target practice and fill the outfits of ships newly commissioned. Few of the private factories, however, are working at full capacity on navy contracts, and the Bureau hopes that with improved methods and machinery introduced in some of the factories the supply of powder of standard quality for the Navy may be in a short while increased and permit the accumulation of a satisfactory reserve.

During the past year the Bureau has greatly felt the need of more detailed and complete inspection of the manufacture of powder by private firms than was possible to obtain through the single powder inspector available for this purpose, this officer having the additional detail of the inspector of steel at the Midvale Steel Company's works and at adjacent works. Six subinspectors of powder have recently been appointed after a competitive examination. These men are being given a special course of instruction at the powder factories at Indian Head and at the torpedo station, Newport, R. I., to fit them for their duties. They will be detailed as assistants to the regular powder inspector at the various powder works of private firms, and it is hoped that the Bureau will be much benefited by this additional service. The

duties of these inspectors will embrace a close observation of the process of manufacture of navy powder, to see that the specifications are carefully carried out, and to report all deviations from specification requirements to the regular powder inspector.

ARMOR.

The manufacture of armor during the past year has progressed in a satisfactory manner, the rate of deliveries continuing to show an increase over previous years. It is believed that a still further progressive increase will be maintained.

During the latter part of the year some delays have been caused to ship contractors by reason of the nondelivery of armor for specified vessels when required for installation. These delays have been occasioned not through the falling off of the amount of armor delivered monthly, but rather by reason of unusual conditions that have enabled the structural progress of certain vessels to advance far more rapidly than was anticipated by this Bureau. In order to obviate the delays that have arisen the Bureau has found it advisable to make a reassignment of the armor for the different vessels among the armor makers. In making this reassignment the Bureau has been materially assisted by the ready willingness displayed by all the armor makers to meet its views and desires. In all ways the armor makers have displayed a most gratifying disposition to further the designs of the Bureau, and to do all possible to overcome any delays. While these delays still obtain to some extent, the arrangements consummated are beginning to show effect, and it is confidently believed that in the near future the delivery of armor to all vessels will fully meet the requirements of the ship contractors, and will continue at such a rate as to remove all cause for complaint.

The improvements noted in the Bureau's last report as under way at one of the armor plants have been recently completed, and the output of that company measurably increased. This increase will become more marked as the new installation can be brought more thoroughly into use. During the year 14,848.80 tons of armor have been delivered, and it is gratifying to note the marked uniformity and excellence of this armor under ballistic test with capped projectiles.

Contracts under the award noted in the Bureau's last report of the 16,809 tons of armor for the five battle ships authorized by Congress were entered into with the Midvale Steel Company on December 15, 1903; with the Bethlehem Steel Company on December 31, 1903, and with the Carnegie Steel Company on January 9, 1904. A ballistic plate, representing the first group of armor under these contracts, has already been successfully tested at Indian Head, and a plate to represent the second group will shortly be presented for test. The Midvale Steel Company has not as yet made any delivery of armor under its contract of December 15, 1903, nor has it submitted any experimental ballistic plates for test to determine the character of armor it may be able to produce, but it is believed that such an experimental plate or plates will be submitted during the current month.

The Bureau has kept itself informed as to the progress making by the Midvale Steel Company in the perfection of its facilities for the production of armor plate of all dimensions and is pleased to note that such progress is very satisfactory and all to be expected. The present

facilities of this company limit the production of armor to plates of small dimensions only, but the additions to its plants that have been projected and are nearing completion will enable the production of plates of all usual dimensions. The full operation of these additions may be expected early in the ensuing year, and there is reasonable promise that the company may commence the delivery of armor under its contract some months prior to its requirements, which prescribes August next as the date of such commencement.

The Bureau is prepared to issue advertisements for proposals for furnishing the 7,922 tons of armor and appurtenances required for the one battle ship and two armored cruisers authorized by the last Congress as soon as contracts for the building of these vessels shall have been let.

PROJECTILES.

Some difficulty has been experienced by the projectile manufacturers in furnishing shell which will meet the severe ballistic tests required by latest specifications. There is certainly no deterioration in the quality of armor plate, and the shell manufacturers find that they have a task of ever-increasing difficulty to meet, and one which must tax their skill and ingenuity to the fullest extent. The Bureau is convinced that the only logical service shell for naval ordnance is one which combines for its caliber the maximum power to penetrate face-hardened armor without breaking up, and the capacity to carry a bursting charge sufficiently large to give an effective fragmentation. Shell combining these essential qualities have been obtained, and while they are necessarily more expensive than common shell or even than armor-piercing shell of older design, their first cost, if adopted as the standard shell, is all that need be considered. They would be purchased and supplied to ships or placed in magazines, but would not be expended during times of peace. Cheap cast-steel shell of the same form would be furnished for expenditure at target practice. The Bureau has now a number of contracts in force for forged-steel shell, and these will be completed before long. However, it will adopt the policy of supplying, in the allowance of ships, an increasing proportion of armor-piercing shell of the larger calibers when shell of the new type are available.

RANGE FINDERS.

A number of range finders of different types have been in use afloat for trial, but none has proved as good as that now generally supplied to the service.

GAS CHECKS.

A number of gas-check pads for the 5-inch, 6-inch, 7-inch, 8-inch, and 12-inch guns, having as a distinctive feature the covering of the pad by a fine wire gauze, have been procured from the inventor and are now in continuous use in the guns of the above caliber at the proving ground. An 8-inch pad of this type has had a more extended use than the others, and its condition, after extended firing under a great range of pressures, encourages the Bureau to hope that a decided advance has been made in securing a reliable and durable pad. Another gas-check pad whose novel feature consists in packing the pad by a

number of rings has been tried, but proved not wholly satisfactory. New rings of an improved quality of metal will be supplied and a second test made.

SIGHTS.

Much of the Bureau's thought has been devoted to the improvement of gun sights and their mounting. The awakening of a lively interest throughout the personnel afloat in target practice and in the training of gun pointers has led to generally very intelligent, though sometimes unreasonable, criticism of the ordnance material. Such criticism must always, in the sum of its influence, be the most effective inspiration to improvement, and it is, perhaps, only natural to expect that occasionally such criticisms should be unreasonable or unjust. The Bureau's endeavor has been to consider all criticisms and to profit by any suggestions which pointed to improvement.

Two new sight mountings have been developed. In one design the sights on the two sides of the gun are independent, and each requires a separate sight setter. In the other the right and left sights are connected by a rigid yoke, and both are set and adjusted on the left side. Both types were tested at the proving ground and both were eminently satisfactory. The yoke-sight mounting, however, which met with the greater favor, has been adopted as standard for all mounts from 3-inch to 7-inch caliber, inclusive.

A number of mounts for which designs of the separate sights on each side had already been prepared will be fitted with this type of sight, as a delay of the vessels for which the mounts are intended would result if it were attempted to replace these by the yoke sights of which no designs had been prepared.

The magnitude of the work involved in modifying gun mounts in service to take the most improved arrangements for elevating and training gear, and the best type of sight mounting, has brought an abnormal demand upon the Naval Gun Factory, already congested with current work of this character. This consideration has lead the Bureau to look to private firms for assistance, and it has now under consideration the letting of a contract for the manufacture of some 160 sight mountings for the 3-inch 50-caliber gun. Several firms are considering the designs preliminary to submitting an estimate for the work, and if this initial effort to obtain satisfactory sights made by private firms meets with success, the Bureau will have recourse to this method of obtaining standard new sight mountings for many of the mounts in service.

INTERIOR COMMUNICATIONS AND FIRE CONTROL.

A proper system of interior communications on board a man-of-war in order to control the firing of the guns is absolutely necessary to obtain the maximum efficiency of gun fire. Provision must also be made against interruptions in these communications during battle. In the original design of a ship the question of interior communications should be considered as one of its essential features. The ships now in service have telephones, voice tubes, range and battle order indicators. The telephones and voice tubes have generally been used as matters of convenience rather than as special adjuncts to the fighting of the guns in action. The range and battle-order indicators, though

especially installed for the purpose of controlling and directing the fire of the battery, are not now considered adequate for the purpose. For the ships now building a more comprehensive system of interior communications has been evolved, which, though having the disadvantage of increased weight, cost, and complexity of the necessary electric circuits, is, at this time, the best that the Bureau can obtain.

Experiments in the last year have been made to develop a special design of telephone for use in communicating throughout the ship in action. It is believed that such a telephone can be developed, and if efficient, a telephone system would replace all voice tubes. In addition, the Bureau has made experiments with a graphic method for visual transmission of orders. An efficient means of visual communication is the most satisfactory for use on board a man-of-war, owing to the great difficulty in communicating by word of mouth when all the guns are firing. The new system is much simpler than the present system in its installation, and has the additional very decided merit of unlimited capacity of expression. The first experiments with this system were made last spring and will be repeated and extended at the target practice this autumn, especially with the view of testing the reliability of the instruments under the shock of gun fire and remaining in adjustment when subjected to ordinary service use.

TORPEDOES.

Thirteen battle ships, 4 cruisers, 16 torpedo-boat destroyers, 34 torpedo boats, and 8 submarine boats are now equipped with torpedo outfits. Of these, 3 of the battle ships have each 2 submerged torpedo tubes.

Modern ideas of the proper use of torpedoes prescribe their installation behind armor or below the water line (except in torpedo craft), and even behind armor it is possible for these weapons to become a menace to the ship from the enemy's fire in action. For this reason, since the Spanish-American war, the torpedoes and tubes have been removed from 4 cruisers fitted for above-water discharge.

The 20 battle ships and armored cruisers building, as well as the battle ship and 2 armored cruisers appropriated for by the last Congress, will be fitted for under-water discharge, the number of submerged tubes for each vessel varying from two to four, according to the spaces and weights available. The decision to equip these vessels with torpedoes was not reached until January of this year, and, in consequence, the installation of the tubes in the ships now building is much behind the work of construction. This circumstance will slightly delay the completion of the vessels, but every endeavor is being made to push the work, and make the delay as little as possible. In some cases it has been decided to install the tubes after the ships have been accepted by the Government.

An additional cause for delay in supplying the torpedo outfits for these vessels is due to the development of high-speed, long-range torpedoes with which most of them are to be armed. The new type of torpedo requires new designs for air compressors, launching tubes, and other torpedo accessories. This work, however, had been taken up prior to the Department's action, and in anticipation of its decision in favor of arming the battle ships and armored cruisers with torpedoes. Efforts to secure the best type of air compressor are being made through a competitive test by all manufacturers of these machines.

All the preliminary drawings of an improved type of submerged launching tube of the Bureau's design have been completed, and the Washington Navy-Yard has been ordered to make one tube as soon as possible. This design is believed to embody all the best features of other launching tubes, with many improvements in addition. The new tubes will be installed on all battle ships and all armored cruisers except the six of the *Pennsylvania* class, which will have tubes of the Elswick type. All features of the new design of tubes which affect the structural work of the vessels have been cited, and the lack of information on these points is no longer delaying construction. The work of installation must be taken up later and may even have to be deferred until after the vessels are accepted by the Government. The Bureau has endeavored without success to induce private manufacturers to submit designs of submerged torpedo tubes. It is hoped that something may be accomplished in this direction in the future.

The Government has procured, through purchase abroad or private manufacture in this country, in all, 517 torpedoes. Of these, 438 have been of Whitehead type, 50 Howell, and 29 Schwartzkopf. Twenty-eight per cent of the Howell torpedoes have been lost, and nearly 10 per cent of the Whitehead have either been lost in practice or expended for experimental purposes. The high percentage of loss is undoubtedly due in a great measure to the inexperience of those handling the torpedoes in practice, and, in the case of the Howell, also to the difficulty in tracing its course. Torpedo practice has been much neglected, and this fact is mainly responsible for lack of experience in handling these weapons and the consequent high percentage of loss, but it is hoped that this unsatisfactory condition will speedily be corrected. The Department, upon the representation of this Bureau, has taken steps to insure prospective ordnance officers of ships opportunity for a course of instruction at the Naval Torpedo Station, and torpedo practice from vessels afloat will be placed upon the same footing with gun practice. Such a policy will, beyond question, result in great and lasting improvement in the general knowledge of the torpedo itself and in the skill in its use.

Two hundred and seventy-four torpedoes are required to completely outfit the vessels now in the Navy. For this purpose 258 Whitehead and 36 Howell torpedoes are available, the remainder on hand being either of obsolete design or of foreign pattern not suited to the launching tubes installed on our vessels. The number of available torpedoes is, therefore, very little in excess of existing necessities, with practically no reserve supply. The Bureau has now a contract with the only company in this country that makes torpedoes for 50 improved high-speed long-range torpedoes, in all respects suited for discharge from the launching tubes now installed. Early in the coming year several of these will, it is expected, be completed and ready for experimental firing during the ensuing summer months. The same company has a contract for two larger torpedoes of increased range and speed, requiring new design of launching apparatus. Contracts for the manufacture of reserve torpedoes will be made as soon as the latest type has been developed and tested.

The development of the gyroscope steering gear continues to receive careful attention both by the torpedo station and by the manufacturer, and recent reports encourage the belief that the latest gear is superior to any yet designed either here or abroad. Experimental work at the

torpedo station continues, but the work of the station is greatly handicapped by the lack of officers. At one time there was but one officer, and not until after July of this year were there more than two on duty at this station.

The submarine boats stationed at Newport have been employed in much experimental work, without serious mishap, resulting in greater knowledge of these novel craft and increased confidence in handling them. The recent sinking of the *Shark* fortunately, instead of resulting in a calamity proved to be a beneficial experience, which will probably prevent similar mishaps in future.

SPECIAL BOARD ON NAVAL ORDNANCE.

The energies of the Bureau have of late years been so engrossed with the problem of supplying and maintaining in order the ordnance equipment of vessels building and in commission, while the number of professional assistants to the Bureau has been from time to time successively reduced and their tenure of duty on shore curtailed, that it has found it a difficult matter to give to experimental work that close and separate study so necessary to make this work of any value. It is a mistake to suppose that the practice of any science has ever reached perfection, and the science of gunnery on which is based the problems of ordnance, where the competition of nations is a spur to development, is a striking example of the truth of this statement.

The form and characteristics of high-power modern guns are always changing, the character of armor and projectiles constantly improving, and, in addition, questions constantly arise as to the proper form of parts that were long ago considered to be successful and final.

The Bureau, appreciating the necessity for continued and uninterrupted experimental work, secured the appointment of a board of three officers whose duties embrace the consideration of questions demanding experimental investigation, the preparation of an outline scheme for the practical conduct of such experiments, and the analysis of results obtained.

The personnel of this board as at present constituted consists of Commander Austin M. Knight, U. S. Navy, president; Prof. P. R. Alger, U. S. Navy, and Lieut. Commander A. C. Dieffenbach, U. S. Navy, members, all officers who have long been identified with ordnance work, and whose professional interests have especially been in ordnance problems of both a theoretical and practical nature.

The board has been of assistance to the Bureau in outlining and directing experiments to determine the actual bore pressures in guns using smokeless powder, in investigating the reliability and accuracy of the standard pressure gauges, and in determining the best form and character of ignition for smokeless powder charges.

Other questions of great importance are receiving the attention of the board, the form of the rotation bands of shell, of rifling in the larger caliber guns being questions that have recently assumed unusual importance.

Facilities and opportunities for experimental work are not always to be had, and the progress of investigation is slow. The Bureau hopes to gain in the end much benefit and results which will point to modifications that are no doubt desirable in many features of ordnance material.

SUBINSPECTORS OF ORDNANCE.

Owing to the number of guns and mounts of large caliber which of necessity are being made at the works of private firms under contracts involving about a quarter of a million of dollars, the Bureau considered it very desirable to have at its command, for duty at these places, the services of a limited number of subinspectors, whose special technical training and practical knowledge of gun construction would insure to the Government the same grade of work as that turned out at the Government factory. To meet this requisite, there were obtained by competitive examination 10 subinspectors of ordnance. These men are now undergoing a special course of instruction at the Naval Gun Factory, and their detail to duty at the works of private firms will be made as soon as their tour under instruction has been completed.

ORDNANCE PAMPHLETS.

During the past year the Bureau has been continuing the publication of pamphlets descriptive of ordnance in the Navy, but satisfactory progress has not been made in this work, due to the deficiency in clerical force and draftsmen and to the great amount of other work that is more important at the present time.

EXPLOSION AT THE NAVAL MAGAZINE, IONA ISLAND, N. Y.

An explosion occurred on November 4, 1903, at the naval magazine, Iona Island, N. Y., during the progress of unfusing and unloading some 13-inch shell, preparatory to rebanding them, with the result that six men of the working party were killed and five others injured. In addition, the destruction of property was very great, amounting to nearly $100,000.

It appears from the report of the court of inquiry that the work of removing the fuses from the 13-inch shell was being carried on inside shell house No. 3 and that of unloading the shell upon a temporary platform standing on the railroad between this shell house and the neighboring shell house, No. 4, some 35 feet away. Both buildings contained large quantities of ammunition.

The regulations for the care of magazines and shell houses, issued by the Department in Special Order, No. 40, of June 20, 1903, are deemed to be as explicit as such general regulations can be made with regard to the work which was being carried on at the time. Paragraph 74, on page 9 of this special order, is as follows:

> Projectiles must never be filled or fused, unfused, or unloaded in the shell house.

Paragraph 75, page 9:

> The operations of filling and fusing, of unfusing and unloading shell are always attended with more or less danger. Such work should be performed by none but the most experienced and careful employees, working in small squads, only large enough to carry on the work efficiently. The work should be done in as safe a location as can be found, preferably out of doors, under tents or awnings, and each working party should be isolated from the others as far as practicable.

Paragraph 49, page 6, of the regulations above referred to provides that—

> Not more than one barrel of powder will be kept unheaded while projectiles are being filled or emptied. The gunner, or an experienced and careful ordnance man under the supervision of the gunner, must be present at all times and places whenever projectiles are being filled or emptied, and work will cease during his absence.

Whatever may have been the cause of the explosion, the failure to follow either the spirit or letter of the above regulations as quoted is no doubt responsible for the extent of the loss, both in lives and in property of the Government.

The Department has lately detailed a commissioned officer to duty in charge of the naval magazine, Iona Island. It is deemed necessary, in view of the great volume of work carried on at this magazine, to relieve the regular inspector of ordnance of the New York Navy-Yard from all supervision of its work. A great improvement in the methods of doing work and in the cultivation of a proper spirit of prudence and caution in all such work which of necessity must be of a most hazardous nature will, the Bureau is confident, result.

ACCIDENT ON BOARD THE U. S. S. BOSTON.

On February 18, 1904, a premature discharge of a cartridge in one of the 6-inch guns of the *Boston* occurred, resulting in the killing of A. J. Kane, seaman, by being struck in the back by the operating lever of the breech mechanism. An investigation of the circumstances showed that at the time of the accident a loaded cartridge case was being tried in the gun to determine whether or not a burr in the powder chamber had been effectually removed. The gun's crews were at the same time being exercised in changing stations, and at the instant of the premature discharge Kane was just rising to his position as trainer, having passed under the breech from left to right of the gun. The charge which exploded was fitted with the combination electric and percussion primer, but the electric connections were not made. The firing-pin spring was found to be unduly stiff, and in addition, in an attempt to correct a faulty insulation somewhere in the firing circuit, the conical head of the pin had been wrapped with insulating tape. This had become gummy, probably through contact with oil, and possibly added to the stiffness of the spring. The explosion occurred during the act of closing the breech and at the instant of complete closure, but before the plug had turned and engaged the thread of the screw box.

That the firing arrangement of the breech mechanism fitted to these guns was defective has long been recognized, and that there was a possible danger of accident from the accidental use of a firing-pin spring of too great stiffness, or from a like cause which would hold the pin too rigidly with the point protruding through the breech plug face, was appreciated. The Naval Gun Factory had this matter under consideration, and an improved and safe firing case for substitution in this type of mechanism was actually being manufactured for substitution throughout the service when the *Boston's* accident occurred. Since then the modified firing cases have been supplied to practically all the 6-inch breech mechanisms using them, and similar safety firing cases for 5-inch and 4-inch breech mechanisms have been designed, are being manufactured, and will be supplied as rapidly as possible.

It is not a sufficient apology for an unsafe mechanism, of course, to say that it had been in use for many years without resulting accident, as a fatal accident might have occurred through the known defects in this mechanism, even without the concurrent circumstances attending this case.

The Bureau, however, deems it proper to remark that the most perfect mechanism of the greatest apparent safety can not be implicitly regarded as security against accident, and that all ammunition, from its very nature, contains within itself the elements of disaster when being handled. The use of loaded ammunition to gauge the effectiveness of a remedy designed to correct a fault should never be permitted, and the fact that a serious defect existed and was at the time being tested for removal should have been sufficient to stop any concurrent exercise of the gun's crew.

THE ACCIDENT IN THE MISSOURI'S 12-INCH TURRET.

In the forenoon of April 13, 1904, while the U. S. battle ship *Missouri* was engaged at record target practice and was at the time using the left gun in her after turret, an accident occurred through the ignition of a charge of smokeless powder while the gun was being loaded. An appalling disaster resulted. The ignition of one-half of the charge which had already been loaded into the gun immediately set fire to the remainder resting in the ammunition car. From this the burning grains fell into the handling room and spread the flame to two full charges exposed and ready for sending up into the turret. There was no explosion, but the rapid burning of about 1,100 pounds of powder filled all the handling room, turret, and intervening spaces with suffocating, burning gases. All persons in the turret, consisting of 4 officers and 14 men lost their lives. Of those stationed below in the handling rooms and magazines, 1 officer and 11 men died of burns or suffocation. Two men stationed in the magazines and two in the handling room escaped. One man died from the effects of gases encountered in the work of rescue.

The evidence before the court of inquiry appointed to investigate the accident showed that 13 shots had been fired from the after turret previous to the accident; that all shots were fired to leeward, and that no apprehension of any danger from flaming gases had been felt by anyone concerned in the target practice, although all were cognizant of this phenomenon and had been cautioned to take care to guard against such danger. After the accident the left gun was found in the loading position with about 4¼ pounds of partly burned powder remaining in the powder chamber; the shell was in the gun and driven about 2 inches beyond its seat, the ammunition car in the loading position and greatly injured by the heat of the flame, and the rammer wrecked in an extended position—such as would have been its position after landing the first half of the charge in the gun. All evidence pointed to the fact that the disaster was caused by the premature ignition of one-half of the charge in the inclosed chamber of the gun. Whether this was caused by flaming gases or by smouldering bits of unburned cartridge bags left in the chamber after the previous discharge is not determined; but the general trend of evidence points to the first as the probable cause.

It had long been known from experience at the proving ground since the introduction of smokeless powder that combustible gases remained in the powder chamber or cartridge case after discharge of the gun. Unburned bits of cartridge bags and of cartridge-bag tape had also been occasionally found, though none of these latter were

ever reported to have been found in a smouldering condition. In previous target practices, when firing to windward in a strong breeze, the phenomenon of gases flaming back on opening the breech had been occasionally observed, but, while this had been considered sufficiently serious to demand the issue of a cautionary order by the Navy Department, such flames had never caused other than temporary annoyance to those stationed near the breech when the latter was opened. The service was aware of the liability of such occurrences, and the Bureau already had in progress of construction and installation on board the *Illinois* an experimental apparatus for expelling gases from one of the turret guns.

The Bureau is inclined to the opinion that the accident to the *Missouri* was caused by flaming gases in the powder chamber of sufficiently high temperature to cause the ignition of the cartridge bag when the first section of the charge was loaded. But whatever the cause of the accident, the remedy is the same, and is obviously the adoption of some effective means of blowing the bore clear of all residue before the breech plug is withdrawn. Apparatus to effect this end is being made for all turrets and will be provided as fast as they can be manufactured and fitted.

ACCIDENTS TO 8-INCH GUNS NOS. 61 AND 62 ON BOARD THE U. S. S. IOWA.

On the morning of February 4, 1904, while the battery of the U. S. S. *Iowa* was being tested under direction of the board of inspection, the muzzles of both 8-inch guns in the forward starboard turret were blown off. The bursting of each gun occurred on the first round fired, although an interval of about twenty minutes intervened between the two accidents, during which the two guns of the port forward 8-inch turret were fired without injury, using the same index of smokeless powder and same weight of charge. The conditions of loading and firing were carefully observed and were normal; the shell used were without bursting charge. The index of the powder fired when the accident occurred has an exceptionally satisfactory history. It was of recent manufacture and had given, when accepted in August, 1902, the required muzzle velocity, with weight of charge of 61 pounds and chamber pressure of 13.3 tons. It was later redried, blended, and repacked in air-tight boxes, and in September, 1903, proof fired a second time, when a weight of charge of 58¼ pounds gave a standard velocity with a chamber pressure of 13.5 tons. The charges used at the time of the accident were put up with the latter weight, and a subsequent examination of all charges of this index remaining on board showed them to be of correct weight and properly put up.

In regard to the guns, there is no reason to believe that they were not properly constructed. They were of a type of which about 66 had been manufactured, and of which a great number are now in service on board the battle ships of the *Indiana* and *Kearsarge* classes, the *Iowa*, and cruisers *New York*, *Brooklyn*, *Olympia*, *Baltimore*, and *Chicago*. Gun No. 61 had previously been fired one hundred and seven times; gun No. 62, ninety times, and probably about 15 rounds from each gun had been fired with smokeless powder. An 8-inch gun of the same type (No. 82) has been fired more than three hundred and sixteen times; of this number more than two hundred and forty-five

have been with smokeless powder and with chamber pressures ranging as high as 19.35 tons. This gun is still in perfectly serviceable condition.

The history of the manufacture of these guns showed that a number of the forgings which entered into their construction were among a lot that in 1894 was recommended for rejection by the Superintendent of the Naval Gun Factory on account of defects known as "sand splits." The condition of these forgings was investigated by two separate boards, the first board recommending their rejection and the second their acceptance at a reduced price. Finally, after nearly two years' delay, the forgings were accepted and used in the manufacture of guns, including 8-inch guns Nos. 61 and 62. While the history of the defective forgings referred to above makes it necessary to consider these defects in searching for the cause of the accident, it must be borne in mind that at the time of their final acceptance these defects were not considered to seriously impair the strength of the gun or reduce it below that for which the guns were designed, and test specimens taken since the accidents occurred from one of these guns near the point of fracture and pulled at the Naval Gun Factory showed physical characteristics within the requirements of gun steel at the time these forgings were manufactured.

A board appointed to investigate the circumstances attending the accident to the *Iowa's* 8-inch guns, after an extended inquiry, reached the following conclusions:

(*a*) The 8-inch guns of the *Iowa*, Nos. 61 and 62, so far as their material is concerned, were as strong as they were designed to be. So far as their design is concerned, they were sufficiently strong and safe for a muzzle velocity of 2,100 foot-seconds produced with a maximum breech pressure of 15 tons per square inch.

(*b*) The fracture of these guns did not result from any weakening from previous firing, from the premature bursting of shells in the bore, or from excessive pressures resulting from abnormal action of the powder charge.

(*c*) The increase of muzzle velocity from 2,100 to 2,300 foot-seconds, while at the same time the maximum breech pressure was decreased from 15 to 13.55 tons, the board assumes, reduced the margin of safety along the chase too much. With the small margin of safety remaining, any unusual conditions tending to throw greater strain on the chase of the gun would be sufficient to account for the accident. Just what these conditions were in the case of the *Iowa's* guns the board has been unable to determine; it was probably a combination in one direction of small variations from the normal. The assumption that the margin of safety has been reduced too much should be verified by experiment.

The conclusions of the board under paragraphs (*a*) and (*b*) are, in effect, that the accident to these guns could not have been caused by any previous injury due to long service or undue strain, and that the design was sufficiently strong for the original limits of 15 tons chamber pressure and 2,100 foot-seconds velocity obtained with brown powder. The conclusion (*c*) presumes as a possible explanation that an increase in muzzle velocity of 200 foot-seconds, with a corresponding decrease in chamber pressure to 13.55 tons, resulted in raising the pressure along the bore too near the designed strength of the gun, thereby reducing the margin of strength too greatly. As bearing upon this latter presumption, it may be said that since the removal of these guns from the *Iowa* very careful experimental firing has been made to determine on the proving ground the exact powder pressure at the point where the fracture occurred. For this purpose a number of rounds were fired under like conditions from the injured gun and from a perfect gun of the same type, using the same index of powder

with precisely the same weight of charge as caused the accident. From the data so obtained, and from pressures taken near the muzzle of the shortened gun, the mean pressure throughout 74 inches of the muzzle length of the perfect gun were obtained and the very probable pressure at the point of fracture determined. Further firing will be made with the short gun still further shortened, and more complete data will be collected, but the results already arrived at indicate beyond doubt that the probable pressure in bore of the injured guns, due to the normal action of the powder as fired, was not excessive or beyond the limit of strength of a sound gun.

From what has been said it may be concluded that these accidents can not reasonably be explained by assigning as the cause any defects in the preparation of the ammunition, of loading or firing, improper manufacture, previous injury, or excessive pressure resulting from the normal action of the powder. Two possible causes remain. First, defective metal at the point of rupture, or, second, the abnormal action of the powder.

In view of the history of the defective forgings alluded to, the Bureau is of the opinion that the influence of possible defects in the metal can not be entirely neglected. Of the second possible cause of the accident, due to the abnormal action of the powder resulting in wave pressures along the bore, such an explanation depends upon a theory which may or may not be correct. Such action of the powder gases is believed to be liable to occur with all powders, and careful experiments made abroad seem to support and confirm such a theory.

The Bureau is investigating all questions which may have a decided bearing in causing such accidents, such as the form of grain, of ignition, of powder charge; and experiments will continue to fix definitely the form of curve of powder pressures. In the meantime the Bureau has considered it only a wise precaution to order a reduction in the muzzle velocity in the older guns to those originally obtained with brown powders.

PROTECTION OF ARTISAN EMPLOYEES.

The Bureau recommends that steps be taken as soon as possible to afford relief to artisan employees who are injured in the naval service.

The work of this Bureau at some of its stations is necessarily of a very dangerous character, and while there have been but few fatalities, a number of its employees have been injured and temporarily or permanently incapacitated for performing work, which is a calamity to them as well as to those dependent upon them.

This has emphasized itself recently, the Bureau having before it the case of a man injured by the explosion of a gun and incapacitated for work, with a wife and family dependent upon him for their support, and it is absolutely impossible to aid the man in any way, there not being even a bed in a hospital at its disposal other than those free to the public.

The Secretary of the Navy in his annual report for the year 1903 called attention to this, and urged that the omission in our law be cured by legislation, and that artisan employees of the Navy injured without fault of their own should be afforded relief. The Bureau can not too strongly urge that Congress be asked to afford the necessary relief.

NAVAL PROVING GROUND AND SMOKELESS POWDER FACTORY.

Lieut. Commander A. C. Dieffenbach, U. S. Navy, who assumed charge of this establishment in July of last year, remains in charge, and under his efficient management an increasing volume of routine work has been done. In addition, an unusually large number of experiments have been made already of immense value to the Bureau.

The following guns have been proved:

12-inch 40 caliber	5
8-inch 40 caliber	12
6-inch 50 caliber	48
6-inch 40 caliber	1
6-inch 35 caliber (converted)	2
6-inch 30 caliber (converted)	3
5-inch 50 caliber	11
4-inch 40 caliber	8
3-inch 50 caliber	47
3-inch field guns	16
9-pounders	1
6-pounders	32
3-pounders	3
1-pounder	83
Total	272

This shows a gain over the preceding year of 28 guns proved of all calibers.

A correspondingly large number of mounts of similar caliber have been tested without accident either to guns or mounts.

Projectiles representing 39 lots of armor-piercing and 85 lots of forged-steel shell were tested for acceptance, with fairly successful results.

The more severe ballistic tests of all projectiles under the latest specifications, added to the undoubted progressive improvement in the quality of armor, has evoked the utmost skill and ingenuity on the part of the manufacturer to meet the difficult conditions.

Thirty-seven armor plates and 22 deck plates have been tested for acceptance, and all have met the requirements successfully.

Two hundred and ninety-five ballistic tests of smokeless powder were made, of which 175 were for the acceptance of new powders. The remainder were, in most instances, tests of powder already in service and re-proved for reassignment of charge.

The Bureau has now little concern from the keeping qualities of the service smokeless powder, and has no apprehension in this respect as to the powder of latest manufacture. It continues to watch all the indices which, from time to time, show a low heat test as gauged by present standards. Whenever it is suspected that a powder of early manufacture is dried out, so as to give abnormal pressures, a proof sample is returned to the proving ground and a new weight of charge is established.

A satisfactory daily output has been maintained at the proving-ground powder factory at a slight increase in cost, due in part to the increased cost of the cotton used.

NAVAL TORPEDO STATION.

Commander F. F. Fletcher, U. S. Navy, has continued in charge of this station since the last annual report and has inaugurated many improvements for which he deserves the commendation of the Bureau.

The work of this establishment has embraced the manufacture of mines, primers, smokeless powder, firing attachments, wrecking outfits, etc, the preparation of ships' outfits of torpedoes and the instruction of officers and seamen gunners in practical torpedo and electric work and in wireless telegraphy.

Torpedo outfits were supplied the *Missouri*, *Iowa*, *Hopkins*, *Nicholson*, *O'Brien*, *Shark*, *Plunger*, and *Porpoise*.

Electric-firing attachments were supplied to 37 vessels and stations. In order to simplify the work of outfitting vessels, this work will, in the future, be done at the Naval Gun Factory, the attachments being then made and fitted to the mounts as these are ready.

The facilities of the torpedo station for the manufacture of smokeless powder will hereafter be devoted in a great measure to experimental work, and the presses and other machines will be repaired or replaced by those of latest type, but the plant will not be extended.

A high grade gun-cotton blocking press will be ordered, in order that a limited capacity for the manufacture of gun cotton may be available in case of emergency or for experimental purposes.

Much valuable experimental work in the chemical laboratory has been done, and the station will be encouraged to continue and extend its activities in this field.

The chemist of the station has visited the navy-yards at New York, Boston, and Portsmouth, and many of the vessels of the North Atlantic Fleet, to examine and test all indices of smokeless powder.

Eleven officers and 198 enlisted men have received instructions at the station. This service of the station will be much improved and vitalized by the adoption of a new plan for ordering classes to instruction at that place. Officers selected for ordnance duty on board ship will, in future, before detailed for such duty, receive a course of instruction at the station, and the course for enlisted men will be extended from three to six months and will continue from May to December, when outdoor practice with torpedoes, mines, and diving apparatus can be carried on without difficulty. Instruction during the winter months will be discontinued.

The Bureau invites attention to the report of the inspector of ordnance in charge of the Naval Torpedo Station, found in the appendix.

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THE LACK OF OFFICERS FOR DUTY UNDER THE BUREAU.

The Bureau desires briefly to refer to the lack of officers doing duty under its supervision. This subject was discussed at length in the last annual report of the Bureau, and the situation, far from being improved, is at present even more serious. The fact that the then Chief of Bureau, an officer eminently qualified to speak with authority, felt so strongly the need of ameliorating the present unsatisfactory conditions would, in itself, be sufficient to command attention. His conclusions were formed after nearly seven years' service in charge of

the Bureau's affairs, and were based upon the most perfect familiarity with its constantly expanding work. The conviction that the present conditions should be remedied is, in the judgment of the present Chief of Bureau, emphasized and fortified by the fact that he is called upon to assume duties of great magnitude and detail of which, naturally, he has yet to acquire a thorough knowledge.

The great volume of the Bureau's business, and the great variety of professional subjects under its purview, constitute a work too onerous for the few officers who have hitherto been available for this duty. As matters now stand, the mere business of handling all routine technical correspondence monopolizes the time of technical officers employed on duty here, and all subjects requiring more deliberate consideration must either be placed aside to await a favorable opportunity for consideration, or must be disposed of with more or less of a snap-shot judgment.

It may be said that the lack of a full corps of officers on ordnance duty as inspectors at the various navy-yards and at works of manufacturers where ordnance material is being supplied under contract, reacts on the Bureau and entails additional burdens of correspondence which would be avoided by having the exterior work of the Bureau properly attended to.

The Chief of the Bureau will not, at present, offer any detailed plan for reorganizing its work, but will make this the subject of communication in the near future.

In order to supply the demand of the service for officers specially equipped for technical ordnance work, a board of officers, appointed by the Department, has devised a system of detailing a certain number of young officers each year to a course of ordnance duty and instruction at the Naval Gun Factory and at the naval proving ground, Indian Head, Md.

The selection of the names of the first detail has been made and, while relief from this source must necessarily lie in the future, the Bureau hopes in the end to be materially benefited by such a programme.

MARKS IN NAVY REGISTER OPPOSITE THE NAMES OF OFFICERS WHO HAVE QUALIFIED IN TORPEDOES AND THE ENTRIES TO BE MADE ON "REPORTS OF FITNESS" OF OFFICERS AND ENLISTMENT RECORDS OF MEN.

I have to renew my recommendation made while inspector of ordnance in charge of the torpedo station in 1901 concerning some method of recording the fact that an officer has made a specialty of torpedoes or some other important branch of his profession and have to submit the following scheme which is an elaboration of the subject as mentioned in that report.

SCHEME FOR RECORDING THE QUALIFICATIONS OF OFFICERS IN TORPEDOES, ETC.

1. Every line officer of the Navy who will comply with the requirements given below will be known as a properly qualified torpedo officer and will have a T, in brackets, printed after his name in the Navy Register. Every enlisted man who will comply with the requirements

given below except g will likewise have a T, in brackets, entered on his enlistment record.

2. Any officer of the grade of commander or above who shall pass the requisite examinations as herein set forth shall be entitled to carry the T the rest of his life without further examination. Any enlisted man who shall pass the requisite examinations as herein set forth shall be entitled to carry the T for four years when he must be reexamined and qualify in order to retain it for another period of four years. In the case of an officer or man who fails to be reexamined through no fault of his own a small t, in brackets, will be printed in the Navy Register or entered on the enlistment record after his name.

3. Any officer below the grade of commander who shall pass the requisite examination as herein set forth shall be entitled to carry the T for five years. In order to carry the T longer than five years each officer must, between the end of the third and the fifth years, after first qualifying, pass a second examination, similar to the first, but mainly covering the progress of torpedo warfare since his first examination. Upon passing this second examination he shall be entitled to carry the T for five years from the date of the said second examination. To carry the T continuously such an officer must continue to pass such examinations at periods not less than three nor more than five years apart, in a manner similar to that set forth in this paragraph for the second examination.

4. Any officer qualifying under the preceding paragraph who shall be entitled to carry the T at the time of his promotion to the grade of commander shall thereafter be entitled to retain the said T until the end of his life without further examination.

5. Any officer or man who shall have once been entitled to carry the T and who shall lose the right by reason of not coming up for examination within the time limits set forth, but who shall pass the said examinations at a later time, shall thereby revive in full his right to the T the same as if it had never lapsed.

6. All examinations set forth herein shall be held at the torpedo station, except examinations of men for requalifying. In the case of the examination of men at sea the examination for requalifying must be held within four years and not less than three years from date of last examination, and shall include the subjects herein laid down and the progress made in all these subjects since the last examination.

7. The examination will be very strictly conducted, and in order to pass successfully an officer or man will have to possess a very thorough knowledge of the several branches. It is desired to make it an honor for an officer or man to have the designating mark appear after his name in the Register, and to this end every effort will be made to keep the distinction from being cheaply won. It will be noted that failure to appear for examination before the end of the periods designated does not permanently disqualify.

8. The examination will as far as possible be of a practical nature and will embrace the following topics:

(*a*) Use, care, and repairing of all United States Navy torpedoes. The officer under examination will be required with his own hands to entirely disassemble, assemble, and successfully run one such torpedo of the mark selected by the examining board, except that such torpedo must be one fitted with the gyroscope steering gear.

(*b*) Installation and use of all United States torpedo directors.

(*e*) Installation, care, and use of United States Navy air plants. The officer under examination will be required to actually operate and repair faults in such form of service air compressor as may be selected by the Board.

(*d*) Assembling, planting, using, and raising the naval defense mine with thorough knowledge of the necessary electrical connections for planting mines singly and in groups.

(*e*) Assembling, care, use, and disassembling of submerged torpedo tubes and of the testing set used in connection therewith.

(*f*) Care and use of the torpedo-wrecking outfit.

(*g*) Handling and caring for torpedo boats under all circumstances.

9. It is believed that, in the main, officers and men will desire to take the course of instruction at the torpedo station prior to appearing for this examination, and also a short course each time before requalifying, and when practicable this should be allowed, and every endeavor made to provide therefor.

10. Upon the receipt of information that any officer has passed the examination herein set forth, the Bureau of Navigation will issue to said officer a certificate that he is a qualified torpedo officer up to a date five years later than the date of such letter of information from the torpedo station, and that the designating mark will appear in all registers during that five years, and men will be likewise notified that they are qualified "torpedo men" for four years from date of successfully passing the examination for qualification, and a note will be made to that effect on the copy of the man's enlistment record on file, and the designating mark entered on his enlistment record.

11. It is considered that this will be of much assistance to the detail officer in making details of torpedo officers and torpedo men for ships and for officers and men to serve on board torpedo boats and destroyers.

A large number of officers will be glad to have it a matter of record that they have perfected themselves in the minutiæ of an important branch of their profession, and that they have acquired information and knowledge that can not ordinarily be obtained either at the Naval Academy or in active service; also officers need not then be detailed for torpedo duties or torpedo boats and then instruct themselves at the expense of plants and boats.

In my opinion it would be an excellent idea to carry out the same scheme in regard to officers qualifying in a somewhat similar manner in other special branches, such as electricity, steam engineering, etc., the particular specialties of officers in which they are most proficient and best qualified being shown by appropriate marks after their names in the Navy Register and a matter of record at the Navy Department.

In order that officers and men may be selected for ordnance or torpedo work on shore or afloat, it is further recommended that commanding officers be required to enter upon the "Report of Fitness" of officers and enlistment records of men a brief statement of the aptitude shown for ordnance and torpedoes. This entry should be a specific statement of the aptitude shown, and how; and if the commanding officer has no knowledge of the aptitude of the officer or man, the entry should so state. If these entries are carefully considered and prepared officers and men could be selected for special courses of instruction in ordnance and torpedoes in an intelligent manner and without wasting time instructing those who have not original aptitude.

INADEQUATE OFFICE FACILITIES.

The Bureau has in several of its previous reports called attention to the overcrowding of its rooms and to the poor accommodations it has for transacting its business. As a result of this overcrowding the efficiency of the work is affected and health of the occupants menaced.

There are at present allowed to the Bureau 7 office rooms, which are occupied by 33 persons. At least 5 additional rooms are considered necessary to relieve the congestion and to allow the work of the Bureau to be properly and efficiently carried on.

The report of a board appointed by the Department in its order of January 23, 1902, No. 13587, stated:

> We find the congestion in the office rooms of the several Bureaus almost inconceivable. It is unbusinesslike, unsanitary, and detrimental to the proper conduct of the Navy.

When the Mills Building was rented by the Department in carrying out the recommendations of the above-mentioned board this Bureau gained only one office room and one small attic room, and consequently received practically no relief so far as space for its working force is concerned.

It has been found necessary to box up and store at the Washington Navy-Yard many important records and documents which should not be separated from the regular files, but the conditions were such that some relief was necessary, and this seemed to be the only solution of the question.

The following table shows the growth of the Bureau since the year 1883:

	1883.	1904.
Number of rooms occupied	8	7
Floor space of rooms occupied.....square feet..	2,812	2,061
Number of officers on duty	7	7
Number of clerks and writers (no messengers)	3	19
Number of draftsmen	2	4

The Bureau's appropriations since the year 1883 have advanced from $336,943 to $15,995,606 in 1904, an increase of nearly 5,000 per cent, while the floor space and number of rooms occupied has been decreased.

It is urgently recommended that steps be taken as soon as possible to increase the number of rooms in this Bureau and relieve this congestion.

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Respectfully,

N. E. MASON,
Chief of Bureau of Ordnance.

The SECRETARY OF THE NAVY.

REPORT OF THE CHIEF OF THE BUREAU OF CONSTRUCTION AND REPAIR.

DEPARTMENT OF THE NAVY,
BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., October 21, 1904.

SIR: In compliance with the Department's instructions, I have the honor to submit the report of the Bureau for the fiscal year ended June 30, 1904, and estimates for appropriations required for the fiscal year ending June 30, 1906.

The estimate marked "A" is for the salaries of certain clerical employees of the Bureau.

The estimate marked "B" is for the construction and repair of vessels at navy-yards and on foreign stations, the purchase of stores, materials, machinery, tools of all kinds, and the proper performance of all general work for the Navy in the line of construction and repair.

The demands upon this appropriation naturally increase in proportion to the growth of the Navy and the increased number of naval stations to be maintained.

The estimates marked "B Special" are for the improvement of construction plants at the several navy-yards and naval stations, and are in amount barely sufficient to provide for the necessary modifications of existing plants to render them efficient.

The estimates marked "C" are for the pay of the regular clerical force at the several navy-yards carried on the "Civil establishment."

The estimate marked "D" is for the amounts required by this Bureau under appropriation "Increase of the Navy, construction and machinery," for new vessels authorized by Congress to June 30, 1904.

The aggregate of all estimates except "Increase of the Navy, construction and machinery" shows a reduction of $180,450 from the same appropriations for the fiscal year 1905.

Under the Department's instructions these estimates have been strictly confined to those necessary for the maintenance of the fleet and naval stations and do not include any special estimate for construction of yard craft on foreign stations these items to be covered by the general appropriation.

The appropriation "Increase of the Navy" is affected by the increased number and increased rate of construction of ships already authorized by Congress.

ESTIMATES, APPROPRIATION CONSTRUCTION AND REPAIR, 1905–1906.

ESTIMATE "A."—*Salaries.*

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1905.
1 chief clerk (appropriated)	$2,000.00		
Increase of salary to $2,250 (submitted)	250.00		
1 clerk of class 4, at $1,800 (submitted.)	1,800.00		
1 clerk of class 3, at $1,700 (submitted)	1,700.00		
3 clerks of class 3, at $1,600 each (appropriated)	4,800.00		
1 clerk of class 3, at $1,600 (submitted)	1,600.00		
1 assistant draftsman, at $1,400 (appropriated)	1,400.00		
3 clerks of class 1, at $1,300 each (appropriated)	3,900.00		
2 clerks of class 1, at $1,200 each (appropriated)	2,400.00		
9 clerks of class E, at $1,100 each (appropriated)	9,900.00		
15 clerks of class E, at $1,000 each (appropriated)	15,000.00		
5 copyists, at $900 each (appropriated)	4,500.00		
1 assistant messenger, at $720 (appropriated)	720.00		
1 laborer, at $660 (appropriated)	660.00		
9 messenger boys, at $600 each (appropriated)	5,400.00		
1 messenger boy, at $400 (appropriated)	400.00		
Total		$56,430.00	$51,080.00

Statement of persons employed under legislative, executive, and judicial act of March 18, 1904 (Stat. L., p. 121), as draftsmen, and for other technical services, and the compensation paid to each under appropriation "Increase of the Navy; Construction and Machinery," in this Bureau.

	Per diem.	Per annum.	Total.
1 chief draftsman	$9.00	$2,817.00	$2,817.00
2 leading draftsmen	7.52	2,358.76	4,707.52
1 leading draftsman	7.04	2,203.52	2,203.52
1 electrical expert aid	7.04	2,203.52	2,203.52
3 draftsmen	6.48	2,028.24	6,084.72
7 draftsmen	6.00	1,878.00	13,146.00
11 draftsmen	5.52	1,727.76	19,005.36
3 draftsmen, first class	5.04	1,577.52	4,732.56
4 draftsmen, second class	4.48	1,402.24	5,608.96
3 draftsmen, third class	4.00	1,252.00	3,756.00
3 draftsmen, fourth class	3.60	1,126.80	3,380.40
5 assistant draftsmen, first class	3.28	1,026.64	5,133.20
5 assistant draftsmen, second class	2.80	876.40	4,382.00
Total			77,160.76

ESTIMATE "B."—*Construction and repair of vessels.*

Detailed object of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1905.
For preservation and completion of vessels on the stocks and in ordinary; purchase of materials and stores of all kinds; steam steerers, pneumatic steerers, steam capstans, steam windlasses, and all other auxiliaries; labor in navy-yards and on foreign stations; purchase of machinery and tools for use in shops; carrying on work of experimental model tank; designing naval vessels; construction and repair of yard craft, lighters, and barges for use at home stations; wear, tear, and repair of vessels afloat; general care, increase, and protection of the Navy in the line of construction and repair; incidental expenses for vessels and navy-yards, inspectors' offices, and bureau, such as advertising, foreign postage, telegrams, telephone service, photographing, books, professional magazines, plans, stationery, and instruments for drafting room, eight million dollars: *Provided*, That no part of this sum shall be applied to the repair of any wooden ship when the estimated cost of such repairs, to be appraised by a competent board of naval officers, shall exceed ten per centum of the estimated cost, appraised in like manner, of a new ship of the same size and like material	$7,983,000	$7,983,000	$8,000,000

ESTIMATE "B, SPECIAL."—*Improvement of construction plants.*

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1905.
For repairs to and improvement of plant at navy-yard, Portsmouth, N. H. (appropriated)	$20,000.00	$20,000.00	$20,000.00
For repairs to and improvement of plant at navy-yard, Boston, Mass. (appropriated)	30,000.00	30,000.00	30,000.00
For repairs to and improvement of plant at navy-yard, New York, N. Y. (appropriated)	30,000.00	30,000.00	50,000.00
For repairs to and improvement of plant at navy-yard, League Island, Pa. (appropriated)	20,000.00	20,000.00	20,000.00
For repairs to and improvement of plant at navy-yard, Norfolk, Va. (appropriated)	15,000.00	15,000.00	15,000.00
For repairs to and improvement of plant at navy-yard, Pensacola, Fla. (appropriated)	20,000.00	20,000.00	20,000.00
For repairs to and improvement of plant at navy-yard, Mare Island, Cal. (appropriated)	20,000.00	20,000.00	20,000.00
For repairs to and improvement of plant at navy-yard, Puget Sound, Washington (appropriated)	30,000.00	30,000.00	30,000.00
Equipping navy-yards for construction of vessels: For the purpose of preparing and equipping such navy-yard or navy-yards as may be designated for the construction of vessels (appropriated)	200,000.00	200,000.00	

ESTIMATE "C."—*Civil establishment.*

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriations.	Amount appropriated for current fiscal year, ending June 30, 1905.
At navy-yard, Portsmouth, N. H.:			
1 clerk to naval constructor (appropriated)	$1,400.00		
2 writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Boston, Mass.:			
1 clerk to naval constructor (appropriated)	1,400.00		
2 writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, New York, N. Y.:			
1 clerk to naval constructor (appropriated)	1,400.00		
3 writers, at $1,017.25 each (appropriated)	3,051.75		
3 clerks, at $1,200 each (appropriated)	3,600.00		
3 clerks, at $1,100 each (appropriated)	3,300.00		
At navy-yard, League Island, Pa.:			
1 clerk to naval constructor (appropriated)	1,400.00		
1 writer, at $1,017.25 (appropriated)	1,017.25		
At navy-yard, Washington, D. C.:			
1 clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Norfolk, Va.:			
1 clerk to naval constructor (appropriated)	1,400.00		
2 writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Charleston, S. C.:			
1 clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Pensacola, Fla.:			
1 clerk to naval constructor (appropriated)	1,200.00		
1 writer, at $1,017.25 (appropriated)	1,017.25		
At naval station, New Orleans, La.:			
1 clerk to naval constructor (appropriated)	1,200.00		
At navy-yard, Mare Island, Cal.:			
1 clerk to naval constructor (appropriated)	1,400.00		
2 writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Puget Sound, Wash.:			
1 clerk to naval constructor (appropriated)	1,400.00		
1 clerk, at $1,200 (submitted)	1,200.00		
1 clerk, at $1,000 (appropriated)	1,000.00		
1 clerk, at $900 (appropriated)	900.00		
At naval station, Cavite, P. I.:			
1 clerk to naval constructor (appropriated)	1,400.00		
2 clerks, at $1,200 each (appropriated)	2,400.00		
Total		$42,024.25	$40,824.25

ESTIMATE "D."—*Increase of the Navy: Construction and machinery.*

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year, ending June 30, 1905.
On account of hulls and outfits of vessels and steam machinery of vessels heretofore authorized (See joint letter below.)	$30,410,833	$30,410,833	$19,826,860

WASHINGTON, D. C., *September 1, 1904.*

SIR: 1. We have the honor to submit herewith, in duplicate, joint estimates (inclosures 1 and 2) of the amounts required by the bureaus of Construction and Repair and Steam Engineering, under appropriation "Increase of the Navy, construction and machinery," for work on new vessels authorized by Congress, to June 30, 1906, viz:

Sheet D.

Under Bureau of Construction and Repair:		
For fiscal year 1904–5	$20,152,755	
For fiscal year 1905–6	17,773,691	
		$37,926,446
Under Bureau of Steam Engineering:		
For fiscal year 1904–5	8,285,403	
For fiscal year 1905–6	8,116,591	
		16,401,994
Aggregate		54,328,440
Balance in Treasury available for above July 1, 1904 (less the sum of $260,000 for one gunboat to take the place of the *Michigan* on the Great Lakes, authorized by act approved May 4, 1898, said vessel to be built as soon as permitted under treaty)		23,917,607
Appropriation required for fiscal year 1905–6		30,410,833

2. This amount, $30,410,833, is the estimated amount required to be appropriated for work on new vessels authorized by Congress for "Increase of the Navy, construction and machinery," for the fiscal year ending June 30, 1906.

Very respectfully,

W. L. CAPPS,
Chief Constructor, U. S. Navy, Chief of Bureau.
W. H. H. SMITH,
Acting Chief of Bureau.

The SECRETARY OF THE NAVY.

IMPROVEMENT IN CONSTRUCTION PLANTS AT NAVY-YARDS.

The reports of naval constructors at navy-yards indicate the desirability of many improvements in their respective departments in order to equip them for undertaking with economy and dispatch all classes of repairs needed by the fleet. In nearly all cases the recommendations of the naval constructors provide for desirable improvements, but the Bureau does not consider all of them necessary at this time. It has therefore made separate recommendation to the Bureau of Yards and Docks in relation to those now considered most necessary and has deferred for future consideration those which need not be provided for in next year's appropriations.

The work of the Bureau at several navy-yards has been somewhat interfered with by delays in the construction of buildings intended for its use. In some instances buildings, appropriations for which were

made more than two years ago, have not been begun. This is notably the case with respect to buildings for power plants at the navy-yards at League Island and Puget Sound. At League Island it has been necessary to temporarily house over the main power station of the construction and repair department, since, although the machinery is in place and in running order, the plans for the building have only recently been completed. As the new construction and repair power plant at the navy-yard, League Island, is of the very latest design and thoroughly efficient, and is practically the only complete power plant in the yard, it is recommended that the work of erecting the power house, for which appropriation was made in July, 1902, be undertaken immediately and prosecuted with all possible dispatch, the building being so designed that extensions thereto can be made economically should the Department finally decide to concentrate all the power of the yard under one roof. The Department now having under consideration the general subject of power plants at navy-yards, and the views of this Bureau having already been brought to its attention, further comment does not seem necessary at the present time.

DRY DOCKS.

The Bureau is still embarrassed by the lack of adequate docking facilities for vessels of the fleet, and although the completion of the new granite docks at Portsmouth, N. H., and Boston, Mass., was definitely promised some months ago, it is now more than probable that they will not be ready to dock all classes of vessels before January, 1905. It will thus be necessary to send to the navy-yard, New York, for docking, the battle ships which are now under repair at League Island, Pa., Norfolk, Va., and Boston, Mass. Although appropriations were made from six and a half to three and a half years ago for the construction of dry docks at League Island, Pa., Mare Island, Cal., Norfolk, Va., New York, N. Y., and Charleston, S. C., these docks are far from completion, some of them being barely begun.

Reference to the reports from the various navy-yards will indicate clearly the great demand made upon the docking facilities of the Bureau, and the fact that the navy-yard, New York, is, at the present time, the only navy-yard on the Atlantic coast at which battle ships can be docked indicates the serious importance of undertaking promptly, and prosecuting with all possible dispatch, the construction of such docks as have already been authorized.

PIERS AND WATER FRONT.

One of the most serious disadvantages under which a majority of our navy-yards is now laboring is the scarcity of berthing space in reasonable proximity to shops and storehouses. This deficiency in suitable berthing space has reached such an acute form at the navy-yard, New York, as to seriously impair the efficiency of that yard when undertaking repairs to the fleet. Although unquestionably the best-equipped navy-yard on the Atlantic coast, its available water front in immediate proximity to the docks and shops is now so seriously reduced as to permit the berthing of only two large vessels, in addition to the U. S. S. *Connecticut*, which is now under construction and must of necessity occupy, for nearly two years to come, a large portion of the available

water front. The necessity for prompt and adequate provision of piers and extensions of quay walls at the navy-yard, New York, has been brought forward on several occasions during the past four years, and more than eighteen months ago, in response to a resolution of the Senate, there was prepared and submitted a complete report with plan and estimates, showing clearly the possibility of suitable extension of the water front in order to provide for the needs of the fleet as then composed, and also making liberal provision for future extensions so as to amply accommodate the battle ships and armored cruisers now under construction. While the navy-yard, New York, is the yard most seriously in need of improvements of this character, the navy-yards at Portsmouth, N. H., Boston, Mass., League Island, Pa., Norfolk Va., and Mare Island, Cal., are also seriously deficient in berthing space. When it is borne in mind that the cost of repair work on ships in commission or "in ordinary" is directly influenced by the proximity of the vessels to the repair shops, the increased cost of work when vessels are remote from the shops being sometimes as much as 40 per cent, it is clearly apparent that the extra cost of repairs by reason of such inadequate berthing space near the shops will, in a few years, amount to more than the first cost of suitable water front and piers if such improvements are not taken promptly in hand. The Bureau, therefore, can not too urgently recommend prompt action in this matter, and requests that the estimates for this year's appropriation make liberal provision for such improvements, the appropriation therefor to become available immediately after the passage of the bill.

ASSISTANTS TO THE BUREAU.

From time to time, for many years past, my predecessors have recommended that an assistant be provided for this Bureau, with legal authority to act in the absence of the Chief of Bureau, such provision having already been made for the Bureaus of Navigation, Ordnance, Supplies and Accounts, and Medicine and Surgery.

The Bureau's need for legally authorized assistants would seem too apparent to require formal demonstration. It is considered, therefore, quite sufficient merely to invite the Department's attention to the magnitude of the work now devolving upon this branch of the naval service, the vessels now under construction for the United States Navy involving a larger tonnage of battle ships and armored cruisers than is being built at the present time for any foreign government, not even excepting Great Britain, while work in connection with the maintenance of the fleet and the refitting and repair of vessels already in service is constantly increasing.

A very large proportion of the work passing through the Bureau must, of necessity, be supervised by officers who perform the duties of "assistants to the Bureau," although they have no legal status as such. The authorization of the assistants herein recommended would not necessarily increase the number of officers of the construction corps now on duty in Washington, however desirable such increase would be, since the total number of officers in that corps is limited by law, and it is quite impracticable, at the present time, to add to those on duty at the Bureau without reducing unduly the number available for outlying stations. As indicating the extremely limited commissioned personnel attached to the Bureau of Construction and Repair,

it may be noted that, excluding the Chief Constructor, this force consists of only five naval constructors, whose duties embrace both supervisory and design work, whereas the designing and supervisory staff of the construction department of the British Admiralty in London is composed of a director of naval construction, three assistant directors of naval construction, one chief constructor, thirteen constructors, and twenty assistant constructors.

Apart from the necessity of providing assistants to the Bureau, it is most desirable that the officers so assigned should have the benefit of the highest pay of their grades, in like manner as the assistants already authorized by law for other bureaus of the Navy Department. It is not desired to institute any general comparison between conditions of service in the Navy and in civil life, but it is worthy of note that in the past two years officers of the corps of naval constructors equivalent to more than 16 per cent of the present effective strength of the corps have resigned in order to accept positions in civil life. In nearly every instance of this kind the greatly increased remuneration and the evident advantage of comparative permanence of residence for those dependent upon them were such as to render irresistibly attractive the temptation to leave the naval service. On the other hand, the Chief Constructor takes pleasure in recording the fact that some of the ablest officers of the corps have declined most flattering overtures to leave the Navy, considerations other than those of a pecuniary or residential nature impelling them to remain in a service in which they had been reared and to which they had given the best years of their lives.

Despite the serious losses by resignation, above noted, the Bureau does not deem it expedient to recommend any general legislation involving increase of pay for officers of the construction corps beyond that now provided by law. It is, however, firmly of the opinion that the very great responsibilities devolving upon those who now perform the actual work of assistants to the Bureau fully justify the recognition involved in their specific assignment to that duty, such assignment carrying with it the highest pay of their respective grades and rank. The status of such officers would then be similar to that already provided for assistants to other bureaus, the sole variation being that, for reasons quite obvious in view of the great quantity and technical character of the work involved, there would be more than one assistant for the Bureau of Construction and Repair.

It is therefore earnestly recommended that the Department take such action as will permit the detail of assistants to the Bureau from among the officers of the construction corps who are now performing, or may hereafter perform, the duties which pertain to such an office, these details to be made by the Secretary of the Navy, and terminable at his pleasure, such officers to have, while so serving, the highest pay of their rank and grade, in the same manner as already authorized by law in the case of officers of other branches of the service assigned to duty as assistants to bureaus.

CORPS OF NAVAL CONSTRUCTORS.

Congress in recent years has made provision for the gradual increase of the corps of naval constructors, but the number actually available for duty at the present time is so inadequate as to make it a matter of serious embarrassment to the Bureau in making designations to fill

existing and prospective vacancies at the various stations where work under cognizance of this Bureau is being performed.

Although there have been at all times numerous candidates for transfer to the construction corps of the Navy, vacancies in this corps remained unfilled for nearly a year on account of the great demand for officers of the line for duty on seagoing vessels, the Department being unwilling under such circumstances to make the necessary designations of graduates of the Naval Academy for transfer to the construction corps. In December, 1903, however, the increase of work in the Bureau, combined with the resignations of officers of the corps, caused the Department to give further consideration to this matter, realizing, as it then did, the urgent necessity of making provision for the present and future needs of the Bureau by filling existing vacancies and returning to the practice of designating suitable graduates of the Naval Academy for special instruction and transfer to the construction corps, this transfer to be effected under the same general conditions which had prevailed for many years past, and which produced such beneficial results that one of your predecessors, in his annual report, commented as follows:

> The Department, in referring to the extent and character of the work done by the Bureau of Construction in the rebuilding of the Navy, desires to call special attention to the important assistance rendered by the young constructors of the Navy. As far back as 1879 it was wisely decided, in view of the great changes taking place in naval architecture, in which this country had borne no part, to select from the most promising graduates of the Naval Academy a few each year who could, under the liberal arrangements made by certain foreign governments, acquire a complete professional training in modern naval construction at the best schools in the world.
>
> Eighty-five per cent of the maximum mark for the four years' course was fixed as the lowest limit for candidates for this special training. The students have been assigned to the various schools at Greenwich, Paris, and Glasgow, and have had additional advantages for the observation of practical work of public and private establishments, which have shown the utmost desire to furnish all possible facilities to the United States constructors. The work performed by these students, under the supervision of the naval attachés, as indicated by their standing at the institutions they have attended, has been in the highest degree successful. The small amount which the Government has expended in their education has been returned to it fifty-fold by the zeal, ability, and knowledge which they have brought to the service, and which have contributed materially to the economy and perfection of design shown in the work.

In December, 1903, after thorough consideration of this subject by the Secretary of the Navy, the Chief of Bureau of Navigation, and the Chief Constructor, it was decided that better results would be obtained if the final selection of candidates for transfer to the construction corps were made after graduates had had some experience on seagoing vessels of the Navy, their general aptitude for the service being then considered, as well as their academic standing at graduation. It was also decided that the applications of all candidates should be referred to the Chief Constructor for such recommendation as might seem desirable in the premises. This Bureau and the Bureau of Navigation have since acted in full accord in this matter and the method outlined above has been fully carried out.

Through the Department's generous recognition of the needs of this branch of the naval service, all existing vacancies have been filled, or the necessary steps preliminary thereto have been taken; but, under the operation of the law, five vacancies, in addition to those which may be the result of casualty, will become due on January 1, 1905, and at a suitable time thereafter the Bureau will request the assignment of

officers to fill the vacancies then existing, in order that such officers as the Department may designate for ultimate transfer to the construction corps may be assigned to temporary duty in the construction and repair department of one of our navy-yards for a brief period of practical instruction prior to undertaking their technical training at the Massachusetts Institute of Technology.

SHIPBUILDING IN NAVY-YARDS.

The progress of work on vessels building at navy-yards, as set forth at length in the reports of naval constructors, is very satisfactory, that of the *Connecticut* being especially gratifying, and it seems worthy of note that the rate of progress on this vessel has been greater than that of any previous battle ship built for the Government, with the single exception of the sister ship *Louisiana*, now building at the works of the Newport News Shipbuilding and Dry Dock Company. While the work on the *Connecticut* has been so far most satisfactory, this result has not been accomplished without unusual effort on the part of those responsible therefor. It should also be borne in mind that the facilities for doing such work at the navy-yard, New York, although now greater than those obtaining at any other navy-yard, were, in the beginning, quite inadequate.

Although every possible precaution is being taken to reduce the cost of the *Connecticut* to the most economical basis, it can hardly be hoped that the work will be done as cheaply as when performed in private shipbuilding yards, whose rates of pay for nine hours' work are, in many cases, less than those being paid for eight hours' work at the navy-yard, New York. It may also be noted that private shipyards do not pay their "per diem" employees for holidays or when on leave, whereas a very large proportion of the "per diem" employees on the *Connecticut* receive pay for fifteen days' leave and seven public holidays during the calendar year, without any work being done in return therefor.

One of the principal objects to be attained in the building of vessels in Government yards is the maintenance of the organization of the yard and the provision of suitable work for experienced mechanics during the absence of the fleet. When the fleet is under repair the resources of navy-yards are severely taxed, and for more than a year past effort has been made to so arrange the programme of repairs to the fleet as to permit a continuous succession of such work, instead of having periodic congestions. The fleet is now increasing at such a rapid rate and the current annual repairs are becoming so large an item in the work of navy-yards that, under normal conditions, ample work will be provided by "repairs and refits" alone, and it is hoped that the movements of the fleet may be so adjusted as to permit such work to be done gradually throughout the year, thus avoiding the alternating congestions and stagnations of work formerly prevalent.

The desirability of having some of the Government yards thoroughly equipped for building vessels of the largest size is fully recognized, but the repairing and overhauling of the fleet must at all times remain the important work of navy-yards, and in time of war their resources will be taxed to the utmost in performing such work.

The act making appropriations for the naval service approved April 27, 1904, made provision for two colliers to be built at navy-yards—

one on the Atlantic coast and one on the Pacific coast. The navy-yard, New York, has been designated as the yard for building the collier on the Atlantic coast, and since the *Connecticut* has been launched a suitable building slip and overhead-crane facilities are now available, and it will be practicable to undertake the actual work of construction of this collier in the near future. No provision, however, was made in the naval appropriation act for equipping any other yard for building vessels so large as the collier, and although the navy-yard, Mare Island, has been designated for this work, there is at present no suitable building slip or overhead-crane facilities at that yard, and the present shipbuilding plant will require alterations and additions. It will therefore be impracticable to undertake the actual work of construction of a collier at the navy-yard, Mare Island, until suitable provision has been made for equipping this navy-yard for such work.

EXPERIMENTAL WORK.

The work at the experimental model basin continued to be carried on during the year in a very satisfactory manner. In addition to current work in connection with new designs, it was found possible to undertake a certain amount of investigation of general problems of resistance, thus accumulating information which will be immediately available for future designs.

In the preparation of the design of the new "scouts," vessels of novel type, the information obtained from the model basin was invaluable. For such vessels not only the shape but the length for a given speed is a matter of great importance. It was found, for instance, in investigating the matter, that a vessel of 4,000 tons displacement and 350 feet long required, in order to make 26 knots, more than double the horsepower of a vessel of the same displacement but made narrower and shallower and stretched to 450 feet in length. There is absolutely no method known by which such information can be obtained except through the model basin, and without it the Bureau would be working largely in the dark concerning the majority of the problems of resistance and propulsion which require solution in the course of its work.

The experiments with fans for ships' ventilation were continued during the year. The investigation of the efficiency of fans such as have been hitherto fitted for ventilation was completed, and the Bureau, having come to the conclusion that it was possible to materially improve the design of such fans, has furnished several makers with the results of the tests of fans of their make, and invited their cooperation in designing fans of improved efficiency. The manufacturers have undertaken this work, and some small experimental fans, which it is hoped will show high efficiency, have been designed at the navy-yard and will be tested during the coming year.

Experiments were also made at the navy-yard during the year on methods of sheathing living quarters on shipboard, and experiments with various types of power water-tight doors and hatches were continued.

VESSELS SURVEYED.

The vessels named in the following table have been surveyed and repairs authorized during the past fiscal year:

Name.	Where surveyed.	Date of survey.	Estimated cost of repairs.
Accomac	Pensacola, Fla	Dec. 22, 1903	$4,490.00
Alabama	New York yard	Sept. 21, 1903	6,150.00
Do	do	Oct. 6, 1903	7,600.00
Alliance	Boston yard	Oct. 9–12, 1903	4,994.00
Do	do	Nov. 4, 1903	3,387.00
Arethusa	do	Oct. 6, 1903	9,212.00
Baltimore	New York yard	July 29, 1903	8,610.00
Do	do	Feb. 4, 1904	6,857.50
Bancroft	Pensacola, Fla	Apr. 20, 1904	4,279.00
Boston	Mare Island, Cal	June 27, 1904	4,266.00
Brooklyn	New York, N. Y	Aug. 3, 1903	250,265.92
Buffalo	do	July 11, 1903	7,100.00
Cæsar	Norfolk, Va	June 3, 1904	47,918.00
Celtic	Puget Sound, Wash	Oct. 10, 1903	109,340.00
Do	do	Jan. 2, 1904	2,755.00
Do	do	Mar. 10, 1904	9,380.00
Do	do	Mar. 26, 1904	11,992.00
Do	do	June 13, 1904	6,650.00
Chicago	Boston yard	Nov. 30 to Dec. 16, 1903	137,653.00
Do	do	Apr. 21, 1904	4,850.00
Cleveland	Norfolk, Va	Mar. 23, 1904	7,803.00
Columbia	League Island, Pa	Apr. 29, 1904	4,458.00
Do	do	May 7, 1904	33,200.00
Do	do	June 1, 1904	8,075.00
Craven	New York yard	Jan. 30, 1904	13,915.00
Colgoa	do	July 22, 1903	3,500.00
Do	do	do	11,024.00
Do	do	July 2, 1904	4,470.00
Don Juan de Austria	Portsmouth, N. H	June 30, 1904	.....
Eagle	do	July 23, 1903	7,970.00
Do	do	Aug. 18, 1903	5,050.00
Eagre	Norfolk, Va	Sept. 9, 1903	3,031.50
Glacier	do	July 30, 1903	55,891.00
Hancock	New York yard	June 26, 1903	12,790.00
Do	do	Aug. 6, 1903	4,940.00
Do	do	Mar. 31, 1904	4,290.00
Do	do	June 13, 1904	3,325.00
Hartford	League Island, Pa	Oct. 5, 1903	6,264.00
Do	Norfolk, Va	May 24, 1904	8,170.50
Illinois	do	July 2, 1903	10,266.50
Do	New York yard	Oct. 8, 1903	4,928.00
Do	do	Apr. 9, 1904	19,030.00
Do	do	Apr. 20, 1904	3,210.00
Do	do	do	3,503.00
Do	do	May 4, 1904	4,915.00
Indiana	do	Feb. 4, 1904	6,290.00
Do	do	Apr. 4, 1904	10,800.00
Do	do	do	4,630.00
Do	do	May 23, 1904	3,350.00
Do	do	June 11, 1904	27,150.00
Iowa	do	Aug. 6, 1903	29,475.00
Kearsarge	do	Oct. 17, 1903	18,877.00
Kentucky	do	June 25, 1904	3,300.00
Lawrence	Norfolk, Va	Oct. 27, 1903	9,227.00
Do	Pensacola, Fla	Feb. 19, 1904	6,342.00
Machias	do	May 16 to June 11, 1904	47,574.00
Maine	New York yard	Jan. 4, 1904	11,811.50
Manileño	Cavite, P. I	Oct. 31, 1903	3,335.00
Marcellus	Norfolk, Va	Mar. 9, 1904	3,802.75
Do	do	Apr. 19, 1904	22,437.00
Massachusetts	New York yard	Sept. 28, 1903	42,000.00
Do	do	Oct. 29, 1903	9,014.00
Do	do	May 7, 1904	5,121.00
Mayflower	do	Oct. 5, 1903	2,876.00
Do	Norfolk, Va	Mar. 17, 1904	20,769.00
Miantonomoh	League Island, Pa	Dec. 30, 1903	25,930.00
Mohican	Mare Island, Cal	Feb. 20, 1904	3,559.00
Monongahela	Portsmouth, N. H	Oct. 19, 1903	11,055.00
Nina	New York yard	June 30, 1904	.....
Nero	Mare Island, Cal	Mar. 2, 1904	9,138.00
Nezinscot	Portsmouth, N. H	Jan. 30, 1904	3,870.00
Olympia	Norfolk, Va	Sept. 19, 1903	24,000.00
Do	do	Sept. 21, 1903	13,125.00
Puritan	League Island, Pa	Oct. 29, 1903	15,692.00
Monterey	Shanghai, China	Oct. 24, 1903	3,727.00
Porter	Norfolk, Va	Feb. 26, 1904	4,239.50
Potomac	Portsmouth, N. H	Oct. 6, 1903	3,560.00
Prairie	League Island, Pa	Sept. 23, 1903	8,130.00
Princeton	Mare Island, Cal	Aug. 15, 1903	89,950.00
Do	do	Dec. 3–15, 1903	11,700.00
Quiros	Cavite, P. I	Feb. 29, 1904	16,785.00
Ranger	Puget Sound, Wash	July 9, 1903	31,888.00
Reina Mercedes	Portsmouth, N. H	Aug. 13, 1903	4,250.00
Relief	Mare Island, Cal	Jan. 11–16, 1904	41,000.00

Name.	Where surveyed.	Date of survey.	Estimated cost of repairs.
San Francisco	Cavite, P. I.	Apr. 1, 1904	$890.00
Saturn	Puget Sound, Wash	Oct. 13, 1903	3,400.00
Scorpion	New York Yard	Sept. 12, 1903	8,100.00
Shubrick	Norfolk, Va	Aug. 24, 1903	8,478.50
Solace	Mare Island, Cal	Nov. 4, 1903	11,357.00
Do	do	Apr. 4-7, 1904	5,117.00
Southery	Portsmouth, N. H	Nov. 21, 1903	6,355.00
Stewart	Norfolk, Va	July 15, 1903	7,771.90
Supply	Mare Island, Cal	Mar. 7, 1904	8,560.00
Terror	Norfolk, Va	Jan. 11, 1904	20,503.00
Topeka	do	Sept. 29, 1903	3,550.50
Do	Boston, Mass	Apr. 28, 1904	6,133.00
Unadilla	Mare Island, Cal	July 9, 1903	3,190.00
Vixen	Portsmouth, N. H	Sept. 21, 1903	7,761.00
Yankee	League Island, Pa	Apr. 21, 1904	8,286.00
Yankton	Portsmouth, N. H	July 9, 1903	8,852.00
Yorktown	Mare Island, Cal	Aug. 20, 1903	107,104.00

STEEL INSPECTION.

The total quantity of ship steel inspected by the Bureau and the amount passed and shipped for incorporation into naval vessels shows an increase over the figures of the preceding year. The total quantity submitted for inspection under the Bureau's requirements during the fiscal year ended June 30, 1904, was 255,484,066 pounds, as compared with a total of about 250,720,700 pounds for the fiscal year ended June 30, 1903. The distribution of this material among the several districts into which the inspection work is divided, as well as quantities rejected for various causes, percentages of rejection, etc., are given in the tables below.

Summary of work performed by steel inspectors under the Bureau of Construction and Repair for the eastern and western districts during the fiscal year ended June 30, 1904.

	Eastern district.	Western district.	Total.
Total amount of steel rolled and inspected.....pounds..	37,930,126	217,553,940	255,484,066
Amount rejected for physical tests.....do....	1,617,119	15,309,822	16,926,941
Percentage rejected for physical tests	4.27	7.04	6.62
Amount rejected for chemical tests.....pounds..	476,442	978,522	1,454,964
Percentage rejected for chemical tests	1.26	.45	.57
Amount rejected for surface defects.....pounds..	1,207,304	40,884,855	42,092,159
Percentage rejected for surface defects	3.18	18.79	16.48
Amount rejected, all causes.....pounds..	3,300,865	57,173,199	60,474,064
Percentage rejected, all causes	8.70	26.28	23.67
Scrap.....pounds..		36,260,260	36,260,260
Amount of finished material accepted and shipped.....do....	34,629,261	124,120,481	158,749,742

The following table shows the distribution of the material among the vessels building:

Detailed statement of shipments for each vessel from the eastern and western districts for the fiscal year ended June 30, 1904.

Name of vessel, etc.	Eastern district.	Western district.	Total.
	Pounds.	*Pounds.*	*Pounds.*
Arkansas	424		424
California	269,178	3,469,852	3,739,030
Charleston	305,139	750,221	1,055,360
Colorado	308,171	276,536	584,707
Cumberland	477,133	1,190,314	1,667,447
Connecticut	773,943	5,822,268	6,596,211
Chattanooga	1,810		1,810
Denver	176		176
Dubuque and Paducah	95,374	1,664,748	1,760,122
Florida	6,013		6,013
Galveston	386		386
Georgia	1,065,598	2,410,479	3,476,077
Idaho	148,994	4,846,395	4,995,389
Illinois	25,210		25,210
Intrepid	2,531,764	232,138	2,763,902
Kansas	855,350	9,118,848	9,974,198
Louisiana	465,635	5,670,415	6,136,050
Maine	37,714		37,714
Missouri	19,130	83,310	102,440
Mississippi	177,059	4,773,661	4,950,720
Milwaukee		1,892,669	1,892,669
Minnesota	1,177,105	13,863,802	15,040,907
Maryland	296,367	387,889	684,256
Nebraska	185,237	3,378,407	3,563,644
New Jersey	583,042	3,054,892	3,637,934
Pennsylvania	304,236	344,856	649,092
Rhode Island	488,032	2,925,598	3,413,630
South Dakota	263,772	2,805,194	3,068,966
St. Louis	508,623	4,028,319	4,531,942
Tennessee	763,636	12,076,257	12,839,893
Vermont	800,440	8,709,408	9,509,848
Virginia	528,427	2,161,271	2,689,698
Washington	403,205	11,084,735	11,487,940
West Virginia	278,675	364,741	643,416
Navy-yard contracts and requisitions	15,131,771	7,090,508	22,222,279
Miscellaneous	5,357,492	9,642,750	15,000,242
Total	34,629,261	124,120,481	158,749,742

Orders for material requiring inspection were distributed among the following manufacturers:

EASTERN DISTRICT.

American Iron and Steel Manufacturing Company ..... Reading, Pa.
American Iron and Steel Manufacturing Company ..... Lebanon, Pa.
American Steel Foundries ..... Thurlow, Pa.
Bethlehem Steel Company ..... South Bethlehem, Pa.
Camden Forge Company ..... Camden, N. J.
Caskey & Son, Wm ..... Philadelphia, Pa.
Carpenter Steel Company ..... Reading, Pa.
Central Iron and Steel Company ..... Harrisburg, Pa.
Crucible Steel Company of America ..... Harrison, N. J.
Delaware Marine Supply Manufacturing Company ..... Wilmington, Del.
Diamond Drill and Machine Company ..... Birdsboro, Pa.
Diamond State Steel Company ..... Wilmington, Del.
Duncannon Iron Works ..... Duncannon, Pa.
Eynon-Evans Manufacturing Company ..... Philadelphia, Pa.
Hoopes and Townsend Company ..... Philadelphia, Pa.
Harrisburg Pipe and Pipe Bending Company ..... Harrisburg, Pa.
Jolley, J. H., & Co ..... Philadelphia, Pa.
Lukens Iron and Steel Company ..... Coatsville, Pa.
Midvale Steel Company ..... Nicetown, Pa.
McCullough Iron Company ..... Wilmington, Del.
Macpherson, Willard Company ..... Bordentown, N. J.
New Jersey Steel Company ..... Rahway, N. J.
Phœnix Iron Company ..... Phœnixville, Pa.

Pennsylvania Steel Company	Steelton, Pa.
Penn Iron Company	Lancaster, Pa.
Pennsylvania Galvanizing Company	Philadelphia, Pa.
Penn Steel Casting and Machine Company	Chester, Pa.
Philadelphia Forge Company	Philadelphia, Pa.
Reading Iron Works	Reading, Pa.
Riverside Metal Company	Riverside, N. J.
Seaboard Steel Casting Company	Chester, Pa.
The Cooper, Wigand, Cooke Company	Delawanna, N. J.
Tioga Steel and Forge Company	Philadelphia, Pa.
Worth Brothers Company	Coatesville, Pa.
Wood, Alan, Iron and Steel Company	Conshohocken, Pa.
Wood Brothers Company	Conshohocken, Pa.
United States Steel Company	West Everett, Mass.

WESTERN DISTRICT.

American Steel Hoop Company	Youngstown, Ohio.
American Sheet Steel Company	Wellsville, Ohio.
American Sheet and Tin Plate Company	Cumberland, Md.
Atlas Bolt and Screw Company	Cleveland, Ohio.
Byers, A. M. & Co	Pittsburg, Pa.
Champion Pivet Company	Cleveland, Ohio.
Clairtown Steel Company	Clairtown, Pa.
Cleveland City Forge and Iron Company	Cleveland, Ohio.
Cambria Steel Company	Johnstown, Pa.
Carbon Steel Company	Pittsburg, Pa.
Carnegie Steel Company	Pittsburg, Pa.
Crucible Steel Company of America	Pittsburg, Pa.
Erie Forge Company	Erie, Pa.
Fort Pitt Forge Company	Pittsburg, Pa.
Homestead Steel Works (Carnegie Steel Company)	Pittsburg, Pa.
Inland Steel Company	Indiana Harbor, Ind.
Jones and Laughlins	Pittsburg, Pa.
Monongahela Iron and Steel Company	Pittsburg, Pa.
Mesta Machine Company	Pittsburg, Pa.
National Tube Works	McKeesport, Pa.
Park Steel Company	Pittsburg, Pa.
Sligo Iron and Steel Company	Connellsville, Pa.
Servance Manufacturing Company	Glassport, Pa.
Upson Nut Company	Cleveland, Ohio.
Union Mills (Carnegie Steel Company)	Pittsburg, Pa.
Wayne Iron and Steel Company	Pittsburg, Pa.

The following is a list of the officers and inspectors engaged upon the inspection of steel under this Bureau:

EASTERN DISTRICT.

Chief Carpenter L. L. Martin, U. S. Navy, inspector in charge. Headquarters, post-office building, Philadelphia, Pa.

Assistant inspectors, J. E. Rettig, F. A. Wheeler, J. T. Callaghan, jr., R. P. Hodgson, J. B. Fry, I. F. DeLaney, Ed. A. Gage, C. H. Davis.

Copyist (clerk), T. F. Maccabe.

WESTERN DISTRICT.

Chief Carpenter E. W. Craig, U. S. Navy, inspector in charge. Headquarters, Homestead Steel Works, Munhall, Pa.

Assistant inspectors, W. B. Canfield, W. D. Clowes, V. S. Yarnall, W. B. Petch, L. C. Martin, J. B. Norris, W. S. Davis, H. C. Cook, J. A. O'Brien, B. H. Brown, J. C. Wickersham, J. K. Dugan, L. B. Mattis.

Special laborers (clerks), H. B. Jones, J. L. Sherk, R. C. Wallower.

ADDITIONS TO THE NAVY.

The additions to the effective force of the Navy by the completion of vessels building under contract and at navy-yards are listed in the table below. These additions are not as great as were made during the preceding fiscal year. They consist of the battle ship *Missouri*, the protected sheathed cruisers *Denver*, *Des Moines*, *Tacoma*, and *Cleveland*, one torpedo boat, and two tugboats. The battle ship *Ohio* was brought to a state near completion before the end of the fiscal year and will be ready to go into commission at an early date.

Tabulated statement of data relative to trials and acceptances of vessels added to the Navy since the last annual report.

Name of vessel.	Type.	Date of trial.	Speed required by contract.	Speed obtained on trial.	Date of preliminary acceptance.	Date of final acceptance.	By whom built.
		1903.	*Knots.*	*Knots.*	1903.		
Missouri	Battle ship	Oct. 21	18	18.14	Dec. 1		Newport News Co.
		1904.			1904.		
Denver	Protected cruiser.	Mar. 31	17	16.74	May 5		Neafie & Levy.
		1903.					
Des Moines	do	Dec. 5	16¼	16.64	Mar. 5		Fore River Engine Co.
						1904.	
Tacoma	do	Nov. 30	16¼	16.58	Jan. 18	Aug. 23	Union Iron Works.
					1903.		
Cleveland	do	Sept. 1	16¼	16.45	Oct. 29	June 22	Bath Iron Works.
Tingey	Torpedo boat	Oct. 12	[a] 25	[a] 24.94	Dec. 15	June 27	Columbian Iron Works.
		1904.			1904.		
Sotoyomo	Steel tug	June 7	12	11.10	[b] Mar. 1		Government.
					1903.		
Pentucket	do		12		[b] Dec. 29		Do.

[a] Standardized trial under modified contract. [b] Reported finished.

Vessels dropped from the Navy.

Name.	Type.	Status.	Disposition.	Appraised value.
Canonicus	Single-turreted monitor.	Regular Navy	Stricken from navy list Jan. 5, 1904. No bid.	$15,000
Lehigh	do	do	Sold Apr. 16, 1904, to R. T. Potter, Fall River, Mass., for $12,051.	10,000
Nahant	do	do	Sold Apr. 16, 1904, to L. E. Lunt, Melrose, Mass., for $11,868.	10,000
Montauk	do	do	Sold Apr. 16, 1904, to Frank Samuel, Philadelphia, Pa., for $12,059.	10,000
Jason	do	do	Sold Apr. 16, 1904, to L. E. Lunt, Melrose, Mass., for $11,868.	10,000

Vessels building for the increase of the Navy are listed in the following tables, which includes all those authorized by law with the exception of those appropriated for by the last Congress, to wit: Battle ship *New Hampshire*, armored cruisers *North Carolina* and *Montana*, scout cruisers *Chester*, *Birmingham*, and *Salem*, colliers *Erie* and *Ontario*, and two seagoing tugs.

Vessels building under contract.

Name.	By whom building.	Estimate of—		Contract time.	Expiration of contract time.
		Degree of completion July 1, 1904.	Probable date of completion.		
BATTLE SHIPS.					
		Per ct.		*Months.*	
Ohio	Union Iron Works	96.0	Sept. 20, 1904	32	June 5, 1901
Virginia	Newport News Shipbuilding and Dry Dock Co.	62.4	Oct. 15, 1905	36	Feb. 15, 1904
Nebraska	Moran Bros. Co	51.0	....do	36	Mar. 7, 1904
Georgia	Bath Iron Works	56.4	Dec. 12, 1905	36	Feb. 18, 1904
New Jersey	Fore River Ship and Engine Co.	61.8	Dec. 3, 1905	36	Feb. 15, 1904
Rhode Island	....do	64.1	Nov. 12, 1905	36	Do.
Louisiana	Newport News Shipbuilding and Dry Dock Co.	50.8	May 27, 1906	41	Mar. 15, 1906
Vermont	Fore River Ship and Engine Co.	10.9	May 14, 1907	42	Dec. 20, 1906
Kansas	New York Shipbuilding Co	13.2	Apr. 25, 1907	42	Dec. 16, 1906
Minnesota	Newport News Shipbuilding and Dry Dock Co.	34.3	Dec. 20, 1906	42	Dec. 20, 1906
Mississippi	Wm. Cramp & Sons	4.6	Mar. 25, 1907	38	Mar. 25, 1907
Idaho	....do	4.7	May 25, 1907	40	May 25, 1907
ARMORED CRUISERS.					
Pennsylvania	....do	82.7	Feb. 13, 1905	36	Jan. 10, 1904
West Virginia	Newport News Shipbuilding and Dry Dock Co.	87.6	Jan. 30, 1905	36	Jan. 24, 1904
California	Union Iron Works	61.0	Dec. 10, 1905	36	Jan. 10, 1904
Colorado	Wm. Cramp & Sons	86.4	Dec. 22, 1904	36	Do.
Maryland	Newport News Shipbuilding and Dry Dock Co.	85.1	Mar. 17, 1905	36	Jan. 24, 1904
South Dakota	Union Iron Works	58.0	Feb. 10, 1906	36	Jan. 10, 1904
Tennessee	Wm. Cramp & Sons	38.5	Aug. 9, 1906	42	Aug. 9, 1906
Washington	New York Shipbuilding Co	34.4	Dec. 4, 1906	42	Aug. 10, 1906
PROTECTED CRUISERS.					
Chattanooga	Lewis Nixon	88.9	Sept. 30, 1904	30	June 14, 1902
Galveston	Wm. R. Trigg Co	84.0	Apr. 1, 1905	30	Do.
St. Louis	Neafie & Levy Shipbuilding Co.	43.0	Apr. 11, 1906	36	Mar. 11, 1904
Milwaukee	Union Iron Works	53.0	Feb. 1, 1906	36	Apr. 17, 1904
Charleston	Newport News Shipbuilding and Dry Dock Co.	76.3	June 17, 1905	36	Mar. 30, 1904
GUNBOATS.					
Dubuque	Gas Engine and Power Co	47.7	Jan. 21, 1905	18	Nov. 29, 1904
Paducah	....do	38.7	Apr. 21, 1905	20	Mar. 6, 1905
TORPEDO BOATS.					
Stringham	Harlan & Hollingsworth Co	98.0	Dec., 1904	18	Jan. 29, 1899
Goldsborough	Wolff & Zwicker	99.0	Nov., 1904	18	Jan. 30, 1899
Blakely	George Lawley & Son	99.0	Sept., 1904	12	Sept. 27, 1899
Nicholson	Lewis Nixon	99.0	Nov., 1904	12	Sept. 26, 1899
O'Brien	....do	98.0	....do	12	Do.

Vessels building at navy-yards.

Name.	Where building.	Estimate of—		Constructional period.	Expiration of constructional period.
		Degree of completion, July 1, 1904.	Probable date of completion.		
BATTLE SHIP.					
		Per ct.		*Months.*	
Connecticut	Navy-yard, New York, N. Y	44.8	July 15, 1906	41	Mar. 15, 1906
TRAINING SHIPS.					
Cumberland	Navy-yard, Boston, Mass	49.0	May 1, 1905	20	May 1, 1905
Intrepid	Navy-yard, Mare Island, Cal	33.8	July 1, 1905	20	Do.
TRAINING BRIG.					
Boxer	Navy-yard, Portsmouth, N. H	55.0	Feb. 1, 1905	.....	June 30, 1904

VESSELS RECENTLY LAUNCHED.

The following is a list of vessels launched since June 30, 1904, together with the date of launching:

Vessel.	Launched—	Vessel.	Launched—
Boxer	Oct. 11, 1904	Louisiana	Aug. 27, 1904
Connecticut	Sept. 29, 1904	Milwaukee	Sept. 10, 1904
Cumberland	Aug. 17, 1904	Nebraska	Oct. 7, 1904
Dubuque	Aug. 15, 1904	Paducah	Oct. 11, 1904
Georgia	Oct. 11, 1904	South Dakota	July 21, 1904
Intrepid	Oct. 8, 1904		

NEW VESSELS AUTHORIZED.

The plans and specifications of first-class battle ships Nos. 23 and 24, *Mississippi* and *Idaho*, authorized by Congress on March 3, 1903, were completed and advertisement issued on November 7, 1903. The contract for these vessels was signed with Messrs. William Cramp & Sons, Philadelphia, Pa., on January 25, 1904, at a price of $2,999,500 for each vessel, the *Mississippi* to be completed in thirty-eight months and the *Idaho* in forty months.

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VESSELS UNDER CONSTRUCTION.

The rate of progress on vessels under construction at the present time has been more encouraging than during any previous year. This is particularly true of the vessels most recently authorized. The *Minnesota*, *Tennessee*, *Mississippi*, and *Idaho* were reported to be slightly ahead of the contract time, and the other vessels of the *Vermont* and *Tennessee* classes are making fair progress. The *Connecticut* and *Louisiana*, while slightly behind the contract time, are well ahead of the best previous average of contract-built ships.

The principal causes of delay on new ships during the past year have been the difficulty in obtaining nickel-steel and other material required, changes on account of the installation of submerged torpedo tubes, and changes which were found necessary to provide sufficiently strong foundations for the new high-power turret and broadside guns.

The *Chattanooga* and *Galveston*, which are being completed at the New York and Norfolk navy-yards, respectively, have recently been making satisfactory progress, and it is expected that the *Chattanooga* will be completed at an early date and the *Galveston* in the ensuing six months.

Vessels were authorized by act of April 27, 1904, as follows: One first-class battle ship of not more than 16,000 tons displacement, No. 25, *New Hampshire;* two first-class armored cruisers of not more than 14,000 tons displacement, No. 12, *North Carolina*, and No. 13, *Montana;* three scout cruisers of not more than 3,750 tons displacement, No. 1, *Chester;* No. 2, *Birmingham*, and No. 3, *Salem;* two colliers to accompany battle fleet, to carry 5,000 tons of coal and have a trial speed of not less than 16 knots, No. 1, *Erie*, and No. 2, *Ontario;* two seagoing tugs (Nos. 10 and 11, not named) were also authorized.

The plans and specifications for the *New Hampshire*, *North Carolina*, and *Montana* will be ready for distribution to bidders on October 15, 1904, and the Department has directed that bids be opened December 15, 1904. The *New Hampshire*, as stated in the circular approved by the Department, is of the same displacement and general characteristics as the vessels of the *Vermont* class. The principal changes, approved by the Department, from the *Vermont* class are as follows:

(*a*) The main transverse bulkheads below protective deck are not fitted with doors, thus limiting access to each pair of engines and firerooms from above the berth deck only.

(*b*) The vertical armor and nickel-steel deck protection has been somewhat rearranged forward and aft, the barbette armor being increased in thickness to the extent of 1 inch on exposed surfaces, while the side armor has been slightly reduced in length on the athwartship armored bulkheads located abreast the barbettes. To compensate for the decrease in extent of vertical side armor, the nickel-steel plating of the protective deck over the magazines, both forward and aft, has been doubled in thickness, i. e., increased from 40 to 80 pounds. The very heavy conning-tower shield has been omitted, the entrance to the conning tower being by means of an armored door of the same thickness as the armor of the conning tower. Access to the conning tower is also provided through the top of the tower.

(*c*) Cellulose has been omitted from the cofferdams behind armor, such material being of doubtful utility, and its omission being in line with recent practice in other countries.

(*d*) While maintaining approximately the same cruising supply of ammunition as was provided for the *Tennessee* class, the magazines have been so arranged as to provide sufficient space to stow about 20 per cent additional 10-inch and 6-inch ammunition in time of war.

(*e*) The coaling arrangements have been somewhat modified and provision made so that coal can be trimmed directly from the upper bunkers to the firerooms—a method which is considered very important when the vessel is in actual battle.

(*f*) In order to obtain greater coal capacity in the bunkers, and at the same time place all firemen's and machinists' wash rooms above the water line so as to provide suitable above-water gravity drainage, the arrangement of the berth and gun decks in the midship portion of the vessel has been modified, all wash rooms being moved to the gun deck. This change will result, incidentally, in the addition of about 200 tons to the bunker capacity of the vessel.

(*g*) In order to save weight, the windlass arrangement has been modified so that instead of four wildcats on a horizontal shaft, four chain lockers and four hawse pipes, there will be two vertical-spindle wildcats, with three chain lockers and two hawse pipes.

The *North Carolina* and *Montana* are of the same displacement and have the same general characteristics as the two armored cruisers of the *Tennessee* class, the principal changes from those vessels being as follows:

(*a*) The main transverse bulkheads below protective deck are not fitted with doors, thus limiting access to each pair of engine and firerooms from above the berth deck only.

(*b*) The vertical armor and nickel-steel deck protection have been somewhat rearranged forward and aft, the barbette armor being increased in thickness to the extent of 1 inch on exposed surfaces, while the side armor has been slightly reduced in length on the athwartship armored bulkheads located abreast the barbettes. To compensate for the decrease in extent of vertical side armor, the nickel-steel plating of the protective deck over the magazines, both forward and aft, has been increased in thickness, i. e., from 40 to 60 pounds. The very heavy conning-tower shield has been omitted, the entrance to the conning tower being by means of an armored door of the same thickness as the armor of the conning tower. Access to the conning tower is also provided through the top of the tower.

(*c*) Cellulose has been omitted from the cofferdams behind armor, such material being of doubtful utility, and its omission being in line with recent practice in other countries.

(*d*) While maintaining approximately the same cruising supply of ammunition as was provided for the *Tennessee* class, the magazines have been so arranged as to

provide sufficient space to stow about 20 per cent additional 10-inch and 6-inch ammunition in time of war.

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(*g*) In order to save weight, the windlass arrangement has been modified so that instead of four wildcats on a horizontal shaft, four chain lockers, and four hawse pipes, there will be two vertical-spindle wildcats, with three chain lockers and two hawse pipes.

The designs of the scout cruisers are being prepared, and it is expected that the plans will be completed by the end of the calendar year. The designs of the colliers are well under way, and it is expected that the plans and specifications will be ready for transmission by November 15, 1904, to the New York and Mare Island navy-yards, respectively, where one each of these colliers is to be built. Sketch designs of the two seagoing tugs are being prepared.

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SUMMARY OF VESSELS IN THE UNITED STATES NAVY.

VESSELS FIT FOR SERVICE, INCLUDING THOSE UNDER REPAIR.

FIRST-CLASS BATTLE SHIPS	11
SECOND-CLASS BATTLE SHIP	1
ARMORED CRUISERS	2
ARMORED RAM	1
SINGLE-TURRET HARBOR-DEFENSE MONITORS	4
DOUBLE-TURRET MONITORS	6
PROTECTED CRUISERS	18
UNPROTECTED CRUISERS	3
GUNBOATS	12
LIGHT-DRAFT GUNBOATS	3
COMPOSITE GUNBOATS	6
TRAINING SHIP (NAVAL ACADEMY), SHEATHED	1
SPECIAL CLASS (DOLPHIN-VESUVIUS)	2
GUNBOATS UNDER 500 TONS	21
TORPEDO-BOAT DESTROYERS	16
STEEL TORPEDO BOATS	30
SUBMARINE TORPEDO BOATS	8
WOODEN TORPEDO BOAT	1
IRON CRUISING VESSELS, STEAM	5
WOODEN CRUISING VESSELS, STEAM	6
WOODEN SAILING VESSELS	9
TUGS	41
AUXILIARY CRUISERS	5
CONVERTED YACHTS	23
COLLIERS	16
SUPPLY SHIPS AND HOSPITAL SHIPS	14
TOTAL	265

VESSELS UNDER CONSTRUCTION OR AUTHORIZED.

FIRST-CLASS BATTLE SHIPS	14
ARMORED CRUISERS	10
PROTECTED CRUISERS	5
SCOUT CRUISERS	3
GUNBOAT FOR GREAT LAKES (NOT BEGUN)	1
COMPOSITE GUNBOATS	2
STEEL TORPEDO BOATS	5
TRAINING SHIPS	2
TRAINING BRIG	1
COLLIERS	2
TUGS	2
TOTAL	47

VESSELS UNFIT FOR SEA SERVICE.

WOODEN CRUISING VESSELS, STEAM	10
WOODEN SAILING VESSELS	5
TOTAL	15
GRAND TOTAL	327

Very respectfully,

W. L. CAPPS,
Chief Constructor, U. S. Navy,
Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT OF CHIEF OF BUREAU OF STEAM ENGINEERING.

DEPARTMENT OF THE NAVY,
BUREAU OF STEAM ENGINEERING,
Washington, D. C., October 1, 1904.

SIR: In obedience to your order of July 5, 1904, the following annual report of the operations of this Bureau during the fiscal year ending June 30, 1904, together with the estimates of the Bureau for the fiscal year ending June 30, 1905, is respectfully submitted:

Appropriation, steam machinery, 1903–4.

Amount appropriated for fiscal year ending June 30, 1904, act approved March 3, 1903	$3,405,000.00	
Amount deficiency appropriation, act approved April 27, 1904	600,000.00	
Total for fiscal year 1903–4		$4,005,000.00
Labor in navy-yards and stations in repair of steam machinery, boilers, etc., of naval vessels fitting for sea service, preservation and repair of tools, handling and preservation of materials, stores, etc	1,732,426.85	
Purchase of materials, stores, machine tools, freight, and incidental expenses	1,380,542.65	
Payments for repairs, materials, freight, and incidental expenses for ships on foreign stations	387,925.78	
Total	3,500,895.28	
Less refunds by transfers in adjustment of appropriations and deposits by paymasters in transferring accounts	66,870.65	
Total expenditures		3,434,024.63
Balance in Treasury September 1 to meet outstanding obligations		570,975.37

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DESIGNS AND WORK IN THE DRAWING ROOM OF THE BUREAU OF STEAM ENGINEERING AT WASHINGTON.

Plans and specifications have been prepared for battle ship No. 25, the *New Hampshire*. The engines and boilers of this vessel are to be similar to those of the *Vermont* class.

Plans and specifications for the armored cruisers Nos. 12 and 13, the *North Carolina* and *Montana*, are nearly completed. These vessels are to be fitted with machinery similar to that used on the *Tennessee*.

Plans and specifications are being prepared for the naval colliers *Erie* and *Ontario*.

Plans and specifications are being prepared for the scout cruisers *Chester*, *Birmingham*, and *Salem*. The boilers of these vessels are necessarily of the express type. It is proposed to fit one of these scouts with reciprocating engines of destroyer type, enlarged.

With reference to the other two scouts, the Bureau has made special efforts to secure information and data that would justify its decision to install steam turbines for propulsion. With this in view representatives of the Bureau were assigned to investigate and report on the turbine installations of the yachts *Revolution*, *Lorena*, and *Tarantula* and the passenger steamer *Turbinia*, as well as testing of turbines at their places of manufacture and plants specially erected for experimental purposes. The results of above investigations were uniformly satisfactory.

Owing to its comparatively recent adoption for ships, authentic data are not obtainable as to its steam economy under conditions arising in naval practice, but the rapid progress of the turbine elsewhere and its probable future application for propelling purposes warrants the installation of turbines for two of the scout cruisers.

Plans were prepared for the boilers and auxiliary machinery of the *Intrepid* and *Alarm*.

The *Wilmington* and *Helena* are being fitted with new boilers of the Hohenstein water-tube type. Plans were prepared for these vessels to suit new conditions. The same holds for the *Indiana* and *Monterey* which are being fitted with Babcock & Wilcox water-tube boilers. The preparation of plans for rearrangement in these vessels, where the type of boiler and the renewal of piping is necessary, requires as much painstaking work as the original plans.

Designs for cylindrical boilers and piping plans were made for *Buffalo*, *Panther*, *Culgoa*, *Isla de Luzon*, and *Wompatuck*.

In order to get the benefits of uniformity, a number of standards were worked out and tabulated.

All working drawings of machinery of vessels under construction submitted by contractors during the year were carefully scrutinized in order to have machinery in accordance with the specifications. The same system is followed in regard to the drawings of work of repairs or alterations of machinery submitted by the navy-yards.

The sketches for illustrations for the report on oil fuel were prepared for the Public Printer in this office.

Besides the work already mentioned, much work has been done in working out weight sheets of completed machinery, and tabulating results for use in estimating weights of machinery for proposed vessels.

THE EXPERIMENTAL STATION AT ANNAPOLIS.

It having been found impracticable to erect the building for this purpose within the limits of the Naval Academy grounds, the board appointed to select a site chose an admirable one across the Severn River, at a distance of only half a mile from the Santee wharf, where the building can be erected within 200 yards of the dredged 30-foot channel, and with very little dredging water enough can be obtained to allow a battle ship to approach within 50 feet of the structure.

The advantages of having the building close to deep water are numerous and obvious. Vessels of all kinds and descriptions will always be required at the Naval Academy for the instruction of the midshipmen. During the intervals when they are not needed for purposes of instruction, they can readily be moored alongside the experiment building and a series of tests made of any new machines that might be installed on board. By proceeding in this manner there would ultimately be accumulated a mass of reliable data concerning the working of every type of machine used in the naval service. These tests, being made on machines installed in the ships and worked under service conditions, would be of far greater value in many cases than similar tests made at the builders' works. For instance, the amount of coal which can be burned per square foot of grate with economy in a boiler located in the hold of a gunboat, with the usual contracted hatches and ventilators masked by the boats and bridge screens, must be far less than could be burned in the same boiler located on shore in an open boiler room. It is not improbable that experiments would show that in such cases it would be more economical to run continuously with artificial draft.

The efficiency of pumps with long suction and delivery pipes fitted with numerous bends, as they usually are when installed in naval vessels, must be quite different from the rated efficiency of the same pumps tested by the makers, and in many cases it would be found that the efficiency could be increased by slight changes in the installation. Such tests being made by the same corps of well-equipped and disinterested observers would be most useful for purposes of comparison.

Other advantages of proximity to deep water will be the facility with which a large stream of water can be supplied to the tank for testing screw propellers; also the water will be accessible for testing circulating pumps which do not have and are not required to have much lifting power, but are designed for handling large quantities. Vessels bringing heavy machinery, coal and other supplies, can discharge their cargoes more readily.

On shore close to this site a hill about 60 feet high rises abruptly, forming an excellent location for a fresh-water reservoir, which can be filled from wells. No less than four wells have been sunk at random in this vicinity, and at a depth of from 15 to 30 feet good, fresh water has been found in every case.

Back from the shore the land rises in every direction, and will form a well-drained site for the erection of such dwellings as may be needed in future for officers and employees.

The Bureau having had the subject of an experiment station under consideration for a number of years, being able to take advantage of the knowledge acquired by the study of other engineering laboratories, and having definite plans with regard to the organization of the

personnel, as well as the character and scope of the work to be performed, it is believed that the building, when completed, will surpass in fitness for its purpose anything of the kind yet erected.

It is the desire of the Bureau to start as soon as possible with tests of turbine machinery, using the fund appropriated by the last Congress for this purpose, and erecting temporary sheds on a part of the ground selected for the experiment station or else making use of some available building within the limits of the Naval Academy. Specifications for a marine turbine engine suitable for the tests have been drawn up, and a circular letter on the subject addressed to every probable bidder. It is expected that at least one suitable engine will be obtained at an early date.

The economic advantages to be derived from the use of superheated steam in any engine have been well known for years. The practical difficulties in the way have led to the abandonment of superheaters on our naval vessels. The construction of the turbine is such that it, unlike the reciprocating engine, is well adapted for working with superheated steam. There remain only minor difficulties, such as the corrosion of the superheaters and the destruction of the materials used for making steam joints. It appears highly probable that these obstacles can be removed and by a series of tests the best form of superheaters and steam joints determined.

One of the subjects which urgently needs investigation by practical experiments is the corrosion of metals on shipboard. This destruction goes on in the most erratic manner, causing machinery to be put out of service for repair at most unexpected and inconvenient times. It affects iron and steel boiler tubes, copper and brass condenser tubes, and pipes of all sorts in all parts of the ship. The action is undoubtedly chemical, assisted perhaps by electrical currents, and must take place in accordance with the established laws of these sciences. A series of well-directed experiments, conducted in the light of the many other experiments made by various individuals in different parts of the civilized world, could hardly fail to disclose the law governing the cases as they occur in practice and to provide a remedy. The fact that the machinery in naval vessels suffers far more from this cause than similar machinery installed in merchant ships, renders it especially appropriate that such experiments should be made under the Navy Department. If the sum asked for is appropriated, this line of research can be begun in temporary sheds pending the erection of the experiment station building.

With the prospect of the introduction of turbine engines in naval vessels in the near future, the Bureau is confronted with the problem of designing screw propellers of a suitable form to run at much higher speeds than have been used heretofore. The first requirement of the case is a mass of accurate data which can be obtained only by testing propellers in a suitable tank designed for the purpose, where the speed can be perfectly controlled and the action closely watched. With these facilities there is no doubt that the resulting improvement in the design of screw propellers will be as great as has been the improvement in the design of ships' hulls since the establishment of the experimental tank at Washington Navy-Yard.

The water-tube boiler having fully established its superiority over the Scotch boiler for naval use, it remains to discover the best form of this boiler. This can best be done by comparative tests of various

types of boilers, the test being made in each case by the same observers. The full-power trials of ships show the combined efficiency of the firemen, the boilers, the forced-draft system, engines, and propellers. When different boilers are installed on ships built from the same plans there is generally enough difference in the firemen, the installation, and the conditions of the trial to vitiate any deductions that may be made as to the comparative merits of the boilers. Then, too, to make sufficiently numerous trials would be very costly and keep the ships from their legitimate service.

The primary object of a boiler test is to discover, not simply whether the one boiler under test is superior to the other different type under test, but to find out exactly in what respect it is superior, and to ascertain if this is an accidental feature of the particular boiler in question, or whether the superiority is inherent in that type.

The Bureau is continually being urged to adopt new inventions and alleged improvements. Untried appliances should not be used on sihips engaged in actual service, and, on the other hand, the Government should not delay to avail itself of every useful invention or mprovement that appears on the market. There is but one course to pursue, and that is to have these inventions and improvements thoroughly tested by persons familiar with the conditions as they exist on shipboard, and equipped with the necessary appliances for making tests that would be conclusive. Work of this kind will furnish constant employment for a number of experimenters, and repay many times over the money expended by decreasing the cost of maintenance of the fleet and increasing its efficiency.

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THE REPORT ON LIQUID FUEL.

The report of the board on liquid fuel has been received from the Public Printer and is now being distributed. The demand upon the Bureau for copies shows the great interest in the subject taken by the public, and, although 5,000 copies have been printed, the present indications are that the Congress may be called upon to have it printed as a public document. In its present form it is a royal octavo volume of 450 pages, including a copious index, and furnished with numerous plates and cuts.

These tests were undertaken and completed during the incumbency of my predecessor in the office of engineer in chief, and reflect great credit upon him, upon the board appointed by him to conduct them, and upon all the able assistants of that board. The Oil City Boiler Works furnished the experimental boiler without cost to the Government, and incurred expense and trouble willingly.

ASSISTANT CHIEF OF BUREAU.

I can not urge too strongly the necessity of an expert engineer officer in charge of this Bureau at all times, and this necessity is becoming more and more apparent each year, owing to the increased amount of work in the Bureau.

During the necessary absence at times of the Chief of Bureau the chief clerk becomes the Acting Chief of Bureau, and is called upon to become responsible for decisions and action on technical matters with which he can not be expected to be conversant. This is not to be interpreted

as a reflection in any way on the ability of the present chief clerk, but in justice to him it is not fair that he should become responsible for the opinions of others on matters requiring professional engineering knowledge. Compared with other bureaus that already have a professional assistant, the necessity for an officer in the same capacity in this Bureau to deal with professional matters in the absence of the Chief of Bureau becomes strongly manifest. I consider this of the greatest importance, and recommend that a request be made to include an item in the naval appropriation bill for the detail of an engineer officer of experience as assistant to the Chief of this Bureau, with rank and pay as provided for similar positions in other bureaus.

In this connection it may be well to state that the engineering staff of the British Admiralty consists of 1 engineer in chief, 1 deputy engineer in chief, 2 assistant engineers in chief, with 22 other engineer officers of different grades.

PERSONNEL.

Preceding any suggestions regarding the engineering personnel, it may be well first to mention a few uncontested facts concerning the present situation.

1. A modern navy without an efficient engineering personnel is deficient in one of its prime requisites and will fail in the hour of battle.

2. The present condition of engineering in the Navy is a cause of grave anxiety to all conversant with the subject.

3. No man can become an efficient engineer without a proper training and experience.

4. The requisite training and experience can not be obtained by serving for a few months only, and at nonconsecutive periods of time, in the engineer departments of ships in commission.

The problem which confronts us is: How are we to obtain properly trained engineers when the present supply of officers so trained is exhausted?

The number of officers borne for engineering duty only is now 66, consisting of 8 captains, 14 commanders, and 44 lieutenant-commanders, the lieutenant-commanders (44) alone being eligible by law for sea duty. There are now no officers below the rank of lieutenant-commander borne for engineering duty only.

Four of the 8 captains will retire for age within a year, and 7 of the 44 lieutenant-commanders will be promoted to the next higher grade within the same time, leaving, at the end of the present fiscal year, but 37 officers available for service at sea. As but one-half of this number should be at sea at the same time, we have 19 officers available for this duty.

In the Navy Register for January, 1904, there are 11 battle ships and 13 cruisers, with 4 other vessels of varying types and classes, each with one engineer on board, a total of 28, or 9 in excess of the number which a proper distribution of shore and sea duty would warrant. The engineer departments of the remaining 62 vessels in commission, excluding torpedo craft, are in charge of young line officers or of warrant machinists.

The shore stations requiring the services of experienced engineers consist of: The Bureau of Steam Engineering, the Naval Academy, 9 navy-yards (these do not include Charleston, S. C., Guantanamo, Key West, New Orleans, and San Juan, each one of which should have

an engineer officer), 8 inspectors of machinery at shipbuilding plants, 10 inspectors of material in charge of inspection districts, the board of inspection and survey, the board for the examination of officers for promotion, and the naval engineering laboratory at Annapolis, Md.

Provided that 19 of the lieutenant-commanders are at sea at one time, there are available for this work 43 officers in all. With 7 officers at the Bureau, and but 1 at each of the other places named above, 38 officers would be required, leaving but 5 for illness (the average age of officers on this list is about 50 years), leaves of absence, experimental work, and sudden and unexpected calls for special duties. One at each navy-yard, building plant, inspection district, etc., is totally inadequate for the work done at those places. The New York Navy-Yard alone should have at least 5 (at present at this yard there are 9 pay officers, 5 naval constructors, and 3 civil engineers), and other yards in proportion. The building plants should have more than one, the number depending upon the amount of work in progress. Each inspector of material of a district should have an assistant, while the Naval Academy and the engineering laboratory should be properly supplied.

The foregoing résumé is given to show the inadequate number of properly equipped engineer officers to perform the duties required of them and is precedent of the suggestions to follow.

The Bureau has nothing but praise to say in regard to the work of the line officers performing engineering duty on board ship. They vary in efficiency in this as in other duties, but, as a rule, they perform their duty well and satisfactorily, and need but consecutive experience to make them efficient engineers. Their preliminary engineering education, obtained at the Naval Academy, has been good, and they lack only confidence in themselves, which comes with experience, to perform the duty required on board ship well and efficiently.

It is a well-established fact that the chief engineer of a modern high-powered vessel of war should not be over 40 years of age, as the strenuous nature of his duties, combined with the continued high temperature of his environment while in the performance of them, with the climbing up and down of narrow and steep ladders and the crawling into almost inaccessible places, soon tells upon the average man of over that age. This fact points to a partial solution of the problem.

All officers, after the requisite experience, which should be gained as assistants during their early service, should be competent to take charge of the engineer departments of our ships, simply as an incident of their naval career, as in these days of steam they should be as familiar with the motive power of their ships as their predecessors were in the days of sails.

Their engineering education at the Naval Academy, combined with a proper subsequent experience, warrants the belief that this is not only possible but probable.

Granting such to be the case, the problem resolves itself into providing engineers for shore duty, the navy-yards, building plants, etc.

For this duty officers are necessary who have made engineering a life work. How are they to be obtained?

It has already been stated that the preliminary engineering education of all graduates of the Naval Academy is good. It is also well known that officers who rise to preeminence in the various branches of the naval profession, do so by continuous study and work after gradu-

ation. It would therefore appear to be feasible to select each year from the line a certain number of officers, who have shown aptitude for engineering, and who desire the detail, to devote their whole time, both at sea and on shore, to engineering.

This would remove them from being in touch with those duties which lead to command, and would necessarily render them unfitted for command. Some compensation must therefore be given these officers for the relinquishment of this greatest of ambitions of officers, the command of ships and fleets.

It has already been stated that an officer over 40 years of age is generally physically unfitted for engineering duty at sea. By the present system of promotion, inaugurated in the personnel bill of 1899, an officer usually reaches command rank when about 40 years old.

These two facts taken together point to the compensation to be given to those officers who relinquish all prospect of commanding ships and fleets. That compensation to be: No sea duty after reaching command rank.

The problem of obtaining an efficient engineering personnel would then, in my opinion, be solved by the following:

1. All officers of the line to be given a sufficient quantity of engineering duty on board ships in commission, at first in a subordinate capacity, to render them qualified to take charge of the engineering departments of any and all ships.

2. The making permanent of that class of line officers who are now designated as "for engineering duty only."

3. The selection each year from the list of midshipmen who have completed their two years' services at sea, otherwise from the list of ensigns, of a certain number of officers for engineering duty, who shall not perform duty at sea after attaining command rank.

These officers should not be removed from their classes, except for cause, and should differ in no way from other officers of the same class, except that their professional duty both at sea and on shore would be engineering.

4. That, for the needs of the service in the near future, the Department authorizes a predetermined number of officers in the different grades to elect to be assigned to the list of officers borne for engineering duty. The fitness of the officers so electing to be determined by an examination prescribed by the Department.

5. That the number of officers so selected be so arranged that no congestion in any one grade may occur, but that a proper flow of promotion may be obtained.

Much that I have proposed in the foregoing has already to a certain extent been tried by the Department, but there is no doubt that an insufficient quantity of engineering duty has been performed by the younger line officers to properly qualify them for filling the higher engineering positions at sea, and none whatever for qualifying them to fill the more exacting positions on shore.

The cause of this is well known—a lack of officers.

So vital, however, do I consider the engineering outlook for the near future that, in order to obtain a sufficient number of officers in training for these shore positions I would change, for the time being, the naval policy of the Government, or so much of that policy as renders necessary the keeping in commission of such a large fleet.

If no other way can be found, it would be to the advantage of the country to place out of commission the requisite number of vessels now in service, in order to obtain the officers for this vital necessity.

WARRANT MACHINISTS.

The grade of warrant machinist in the Navy has now been authorized for a little more than five years, and the officers filling this grade have fully established, by hard work and good service, their right to be placed upon the same footing in all respects as other warrant officers.

The number of these officers renders their service at sea almost continuous, those employed on shore duty being but a small fraction of the whole. This naturally causes discontent among them, and should be rectified as soon as possible by increasing the number.

The fact that there is no advance for them, no commissioned grade, as is the case with boatswains, gunners, carpenters, and sailmakers, is a distinction which also causes discontent, and which can easily be rectified.

The following suggestions are submitted for the consideration of the Department, as it is believed that by their adoption all cause of discontent among this valuable body of subordinate officers would be removed, viz:

1. Increase the number of warrant machinists, so that the same proportion of shore duty as is enjoyed by other warrant officers may be possible with them.

2. After six years' service make them eligible to promotion to chief rank—with, but after, ensigns—as is the case with other warrant officers.

3. Change the titles of the different grades of machinists as follows, viz: Upon appointment to be called acting machinists; after warranting to be called machinists; after promotion to be called chief machinists. The titles of the enlisted machinist personnel to be chief machinist's mates, machinist's mates, first class, and machinist's mates, second class, respectively, instead of chief machinists, machinists, first class, and machinists, second class, as at present. This change would make the titles of the different grades of these officers and men correspond to the titles of the different grades of other warrant officers and men, and would place the title of chief machinist where it properly belongs, at the head of the grades. Should these officers be given a commissioned grade, similar to other warrant officers, the word warrant would necessarily have to be dropped from the title, as a commissioned warrant officer is a self-contradictory term.

4. The right to quarters among all the warrant officers on board ship to be according to date of appointment, warrant, or commission, as the case may be.

It is believed that these few simple changes would render the position of machinist satisfactory in all respects and remove all cause of discontent.

RATING.

The Bureau respectfully requests that the Department consider the question of a readjustment of the ratings of the engineer force, and recommends the following as a much-needed reform:

Establish the rating of chief boiler maker at the pay of $70 per month, this chief petty officer to be appointed under regulations simi-

lar to those which now obtain for other chief petty officers of the engineer force.

Establish the rating of oiler, first class, at $45 per month, and oiler, second class, at $37 per month, in place of rating of oiler now existing.

It is considered that these changes in ratings are not to change the existing complements of vessels, but that in cases where two boiler makers are allowed, one shall be a chief petty officer, and also that a chief petty officer of this rating be assigned to all vessels of high power.

It is recommended that at least one-fourth the complement of oilers be oilers, first class, and the remainder oilers, second class; also that all oilers now in the service be made oilers, second class, eligible for promotion to the new rating of oiler, first class, under the same regulations as now exist.

These changes are necessary in order to give the men of these special abilities some opportunity for promotion commensurate with the value of their services.

Of the changes asked for, the establishment of the rating of chief boiler maker is the most urgent. The boiler maker is a skilled mechanic and directs the laying out of work and has general charge of boiler repair work on board ship. Under present regulations there is no chance of promotion for men holding this rate, there being but one class for this specialty. There is thus no special incentive furnished for doing good work, men of poor or mediocre ability receiving the same compensation and privileges as those who are more capable. By the chance of promotion, increased pay, and the privileges of chief petty officer a better class of men will be attracted for this rating, for which the proper applicants are seemingly too few for present needs.

The lack of experienced men is felt in a great many vessels, as shown by numerous reports received by this Bureau.

This Bureau earnestly recommends that when a vesssl is newly commissioned at least one-half of the detail of engineer force be men of some experience, even if it is necessary to take men from vessels in commission, their places to be filled by recruits.

A vessel just going into commission is more in need of experienced men than any other, and there are several cases on record where the engineer departments of vessels have suffered materially on account of the utter unsuitability and inexperience of the men in the engineer force. It is also recommended that newly enlisted men of engineer's ratings be sent to cruising vessels as soon as an opportunity offers, in order that they may gain some engineering experience as soon as possible after enlistment. If kept on receiving ships, away from their natural sphere of duty, they soon lose interest in their work and become to some extent demoralized.

It is also recommended that coal passers on first enlistment receive the same outfit of clothing as is now provided by regulation for landsmen.

In making these recommendations the Bureau has in mind the general efficiency of the engineering personnel on naval vessels, and it hopes that these recommendations will be carried out at the first opportunity.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter.			Stroke.	Number and type of boilers.	Total grate surface.
				H.P.	I. P.	L. P.			
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Abarenda	Collier	4,670	Vertical, triple expansion.	23	38	62	42	2 single-ended cylindrical.	106
Adams	Cruiser, training ship.	1,375	Horizontal, compound, single screw.	34½	.....	51⅝	42	6 single-ended cylindrical.	192
Adder	Submarine torpedo boat.	122.5	Otto gasoline engine[c]; electric motor.[d]	.....	.....	.....	.....	.....	.....
Ajax	Collier	7,500	Vertical, triple expansion, single screw.	26.5	44	71	60	3 single-ended cylindrical; 1 donkey.	157
Alabama	First-class battle ship.	11,565	Vertical, triple expansion, 2 screws.	33⅛	51	78	48	8 single-ended cylindrical.	697.6
Albany	Protected cruiser.	3,769	.....do.....	31	40	70	30	4 double-ended cylindrical.	468
Alert	Cruiser	1,020	Horizontal, compound, single screw.	28½	.....	42½	42	2 Babcock & Wilcox.	96
Alexander	Collier	6,181	Vertical, triple expansion.	24½	42	64	39	2 cylindrical and 1 donkey cylindrical.	105
Amphitrite	Double-turret monitor.	3,990	Inclined, compound, 2 screws.	32	.....	48	42	4 Babcock & Wilcox.	314
Annapolis	Composite gunboat.	1,060	Vertical, triple expansion, single screw.	15	24½	40	28	2 Babcock & Wilcox.	98
Arethusa	Tank steamer.	6,200	.....do.....	25	40	66	45	2 horizontal double-ended, 1 auxiliary single-ended.	139
Arkansas	Monitor	3,235	Vertical, triple expansion, 2 screws.	17	26½	40	24	4 Thornycroft	198
Atlanta	Protected cruiser.	3,000	Horizontal, triple expansion, single screw.	34	50⅛	74½	42	4 Babcock & Wilcox; 2 cylindrical.	303
Bagley	Torpedo boat	167	Vertical, triple expansion, 2 screws.	17.22	24.78	37.37	21	2 Normand	118
Bailey	.....do.....	235	.....do.....	20	30½	32[b]	18	4 Seabury	236
Bainbridge	Torpedo-boat destroyer.	452	.....do.....	20½	32	38[b]	22	4 Thornycroft	315
Baltimore	Protected cruiser.	4,413	Horizontal, triple expansion, 2 screws.	42	60	94	42	4 double-ended cylindrical.	656
Bancroft	Gunboat	839	Vertical, triple expansion, 2 screws.	13⅜	21	31	20	2 cylindrical straightway, fire tubular.	87.7
Barney	Torpedo boat	167	.....do.....	17.22	24.78	37.37	21	2 Normand	118
Barry	Torpedo-boat destroyer.	462	.....do.....	20½	32	38[b]	22	4 Thornycroft	315
Bennington	Gunboat	1,710	Horizontal, triple expansion, 2 screws.	22	31	50	30	4 cylindrical straightway, fire tubular.	220
Biddle	Torpedo boat	168	Vertical, triple expansion, 2 screws.	17.22	24.78	37.37	21	2 Normand	118

[a] Estimated.

[b] Two low-pressure cylinders.

States naval vessels.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
4,009	a 9.5	1,050	713	6,990	.....	Good	Tender to Mediterranean Squadron.
4,946.4	9.8	800	134	2,200	.....	Fair	Training service, Pacific Station.
.....	{ c 8.732 / d 7.08 }	70	e 850	.....	.....	Good	Torpedo Station, Newport, R. I.
.....	a 12	.....	450	.....	.....	do	Collier service, Asiatic Station.
21,692	17.013	11,366	1,339	4,591	1,206.37	do	European Squadron.
13,156	20.52	a 7,500	747	4,375	684.92	Under repairs	Bremerton Navy-Yard.
4,250	10	560	217	3,742	.....	Good	Out of commission; Mare Island Navy-Yard, Cal.
.....	a 9	1,026	800	6,858	.....	do	Collier service, European Squadron.
12,240	12	1,600	245	1,300	.....	do	Station ship, Guantanamo Bay, Cuba.
3,620	13.17	1,227	324	5,328	100.82	Fair	Ordered to Mare Island Navy-Yard to go out of commission.
.....	a 10	.....	620	6,400	.....	Good	Collier service.
9,370	12.71	1,829.6	340	.....	256.25	do	North Atlantic Fleet, training of Midshipmen.
10,824	a 15½	a 3,500	569	3,594	a 539	do	North Atlantic Fleet, Caribbean Squadron.
5,552	29.15	a 3,920	47	.....	.....	do	Reserve Torpedo Flotilla, Norfolk, Va.
13,230	30.198	a 5,600	90	.....	147.4	Under repairs	Do.
17,768	28.45	a 8,000	180	.....	208.8	Good	First Torpedo Flotilla, Asiatic Station.
16,673	19.5	10,064	1,100	5,300	827.5	do	European Squadron.
2,686	14.37	1,213	139	2,900	104.73	do	Caribbean Squadron.
5,552	29.04	a 3,920	47	.....	a 80	do	Reserve Torpedo Flotilla, Norfolk, Va.
17,768	28.12	a 8,000	139	.....	208.85	do	First Torpedo Flotilla, Asiatic Station.
8,210	17.5	3,392	370	3,336	282.65	do	Pacific Squadron.
5,552	28.57	a 3,910	47	.....	.....	do	Reserve Torpedo Flotilla, Norfolk, Va.

c Surface. d Submerged. e Gallons gasoline.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter.			Stroke.	Number and type of boilers.	Total grate surface.
				H. P.	I. P.	L. P.			
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Birmingham	Scout	4,000	Vertical, triple expansion, 2 screws.						
Blakely	Torpedo-boat	165	do	14	22	25½ [b]	18	3 Normand	150
Boston	Protected cruiser.	3,035	Horizontal, 3 cylinder, compound, single screw.	54		74 [b]	42	8 single-ended cylindrical.	382
Brooklyn	Armored cruiser.	9,215	4 vertical triple expansion, 2 screws.	32	47	72	42	5 double-ended, and 2 single-ended cylindrical.	1,016.2
Brutus	Collier	[a] 6,000	Vertical, triple expansion, 1 screw.	24	40	64	42	2 cylindrical single-ended return tubular; 1 auxiliary, vertical, tubular.	123.4
Buffalo	Converted cruiser.	6,888	Vertical, triple expansion.	32	52	84	54	3 double-ended return fire, tubular.	409½
Cæsar	Collier	5,016	Vertical, triple expansion, 1 screw.	22½	37	61	42	2 cylindrical; 1 donkey.	
California	Armored cruiser.	13,680	Vertical, 4 cylinder, triple expansion, 2 screws.	38½	63½	74 [b]	48	16 Babcock & Wilcox.	1,600
Castine	Gunboat	1,177	Vertical, triple expansion, 2 screws.	15½	22½	35	24	2 marine locomotive.	120
Celtic	Supply ship	6,428	Vertical, triple expansion.	26½	44	72	48	2 double-ended Scotch; 1 donkey.	200
Charleston	Protected cruiser.	9,700	Vertical, triple expansion, 2 screws.	36	59.5	69 [b]	45	12 Babcock & Wilcox.	1,400
Chattanooga	Cruiser	3,100	do	18	29	35½ [b]	30	6 Babcock & Wilcox.	360
Chauncey	Torpedo-boat destroyer.	460	do	20½	32	38 [b]	22	4 Thornycroft	315
Chester	Scout	4,000	do	28½	45	62 [b]	36		
Chicago	Protected cruiser.	5,000	Horizontal, triple expansion, 2 screws.	33½	50½	76	40	6 Babcock & Wilcox and 4 single-ended cylindrical.	633.3
Cincinnati	do	3,213	Vertical, triple expansion, 2 screws.	24	44.5	57 [b]	33	8 Babcock & Wilcox.	507
Cleveland	Cruiser	3,100	do	18	29	35½ [b]	30	6 Babcock & Wilcox.	300
Colorado	Armored cruiser.	13,680	do	38½	63½	74 [b]	48	32 Niclausse	1,600
Columbia	Protected cruiser.	7,375	Vertical, triple expansion, 3 screws.	42	59	92	42	8 double and 2 single-ended cylindrical.	1,408
Concord	Gunboat	1,710	Horizontal, triple expansion, 2 screws.	22	31	50	30	4 cylindrical straight-way fire tubular.	220

[a] Estimated.

[b] Two low-pressure cylinders.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots.*	*Tons.*		
.....	a 24	a 16,000	1,000	.....	.....	To be contracted for	.....
7,575	a 24	3,000	70	.....	a 80	99 per cent completed ..	Geo. Lawley & Son, Boston, Mass.
8,920	15.6	4,300	490	3,700	662.4	Good	Pacific Squadron, Mare Island Navy-Yard.
32,538	21.91	18,770	1,460	5,000	1,333.8	.....do	Flagship, European Squadron.
4,000	a 9	a 1,200	440	3,800	.....	.....do	Collier service, under repair at Hongkong, China.
13,513.5	a 11.5	a 3,600	1,338	7,800	.....	.....do	Pacific Training Squadron.
.....	a 10	a 1,500	817	8,526	.....	Under repairs.....	Collier service, Norfolk Navy-Yard, Va.
70,944	a 22	a 23,000	2,000	5,000	.....	67 per cent completed ..	Union Iron Works, San Francisco, Cal.
4,930	16.3	2,199	250	3,000	144.84	Good	European Squadron.
.....	a 10.5	a 1,690	760	6,000	.....	.....do	Under repairs at Bremerton Navy-Yard.
64,000	a 22	a 21,000	.....	.....	.....	76.3 per cent completed.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
13,200	a 16.5	a 4,500	800	6,925	a 405	93 per cent completed ..	Crescent shipyard, Elizabethport, N. J., and under completion New York Navy-Yard.
17,768	28.64	8,000	139	a 3,024	a 189	Good	First Torpedo Flotilla, Asiatic Squadron.
.....	a 24	a 16,000	1,000	.....	.....	To be contracted for.	.....
23,252.6	a 18	9,000	889	3,806	921.64	Good	Boston Navy-Yard, being made ready for commission.
19,840	19.9	8,490	577	4,560	.....	.....do	Asiatic Fleet.
13,200	a 16.5	a 4,500	800	6,925	a 405	.....do	European Squadron.
68,308	a 22	a 23,000	2,000	.....	.....	94.9 per cent completed.	Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.
14,221	22.8	18,509	1,600	6,800	1,705.9	Good	North Atlantic Squadron.
8,210	16.8	3,404	380	3,336	284.58	Fair	Pacific Squadron, to go out of commission at Bremerton Navy-Yard.

a At 14 knots (estimated).

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter. H.P.	Cylinder diameter. I.P.	Cylinder diameter. L.P.	Stroke.	Number and type of boilers.	Total grate surface.
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Connecticut	First-class battle ship.	16,000	Vertical, triple expansion, 2 screws.	32½	53	61 *b*	48	12 Babcock & Wilcox.	1,097
Craven	Torpedo boat.	146	do	17½	24¾	37	21	2 Normand	118.7
Culgoa	Repair ship	6,300	Single, inverted, vertical, triple expansion.	28	44 7/16	72	48	2 horizontal, return-fire, tubular, double-ended; 1 vertical donkey.	185
Cushing	Torpedo boat.	105	Vertical, quadruple expansion, 2 screws.	11½	16 / 22½	*b* 22½	15	2 Thornycroft	76.6
Dahlgren	do	146	Vertical, triple expansion, 2 screws.	17½	24¾	37	21	2 Normand	118.7
Davis	do	132	do	11½	19	*b* 22⅞	15	2 Thornycroft	88
Dale	Torpedo-boat destroyer.	457	do	20½	32	*b* 38	22	4 Thornycroft	315
Decatur	do	450	do	20½	32	*b* 38	22	do	315
De Long	Torpedo-boat.	192	do	14	22	*b* 25¼	18	3 Normand	150
Denver	Cruiser	3,100	do	18	29	*b* 35¼	30	6 Babcock & Wilcox.	300
Des Moines	do	3,100	do	18	29	*b* 35¼	30	do	300
Detroit	Unprotected cruiser.	2,089	do	26½	39	63	26	3 double and 2 single ended cylindrical.	367.9
Dixie	Cruiser	6,145	Vertical, triple expansion, 1 screw.	33	52	84	54	3 Scotch double ended.	594
Dolphin	Dispatch boat	1,486	Vertical, compound, 2 screws.	42		78	48	2 double and 2 single ended cylindrical.	269.6
Don Juan de Austria.	Gunboat	1,159	Compound, horizontal, back-acting.	40		70	30	4 gunboat	164
Dubuque	do	1,000	Vertical, triple expansion, 2 screws.	9	15¼	25⅛	21	2 Babcock & Wilcox.	100
Dupont	Torpedo boat.	165	do	16	22⅛	*b* 25	16	3 modified Normand.	160.6
Enterprise	Cruiser	1,375	Vertical, compound.	15		30	24	1 Scotch	
Ericsson	Torpedo boat.	120	Vertical, quadruple expansion, 2 screws.	11⅛	16 / 21⅛	30	16	2 Thornycroft	85
Erie	Collier	12,500		28	44½	75	54		
Essex	Cruiser	1,375	Horizontal, compound back-acting.	34		51	42	4 Scotch single-ended.	128.4
Farragut	Torpedo boat.	273	Vertical, triple expansion, 2 screws.	20	29	*b* 30	18	3 Thornycroft	196
Fern	Tender	840	Vertical, compound.	22		36	34	1 gunboat	41
Florida	Monitor	3,225	Vertical, triple expansion, 2 screws.	17	26½	40	24	4 Mosher	240
Foote	Torpedo boat.	142	do	12	19½	*b* 22	16	2 Mosher	95
Fox	do	132	do	11⅞	19	*b* 22⅞	15	2 Thornycroft	88

a Estimated. *b* Two low-pressure cylinders.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
52,752	a 18	a16,500	2,200	5,000	.....	45 per cent completed ..	Navy-yard, N. Y.
5,553	30.1	a 4,200	32	c1,498	.....	Under repair	Torpedo Station, Newport, R. I.
.....	14.6	1,896	968	7,000	.....	Under repair	New York Navy-Yard.
4,750	22.5	1,720	39	c1,092	54.5	Good	Reserve Torpedo Flotilla, Norfolk, Va.
5,553	a 30.5	4,200	32	c1,498	.....	Under repair	New York Navy-Yard.
4,763	23.41	1,750	40	.....	52.04	Good	Navy-yard, Mare Island, Cal.
17,768	28	a 8,000	139	a2,500	201.26	.....do	First Torpedo Flotilla, Asiatic Station.
17,768	28.1	a 8,000	139	a2,500	201.25	.....do	Do.
7,575	24.03	a 3,000	70	a1,680	a 80	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
13,200	a 16.5	a 4,500	800	a6,925	a 405	.....do	Caribbean Squadron.
13,200	a 16.5	a 4,500	800	a6,925	a 405	.....do	Do.
10,978	18.71	5,227	335	2,976	400.31	Fair	North Atlantic Squadron.
.....	a 16	a 3,800	1,294	7,000	.....	Good	Do.
8,161.7	a 14.6	2,255	265	3,180	a 410	.....do	Special service, Washington, D. C.
4,442.28	a 13.5	a 1,500	225	2,250	.....	Under repair	Portsmouth, N. H., Navy-Yard.
4,200	a 13	a 1,000	200	.....	.....	43.47 per cent completed	Gas Engine and Power Co., Morris Heights, N. Y.
8,287.7	26.5	.....	68	1,247	77.95	Good	Reserve Torpedo Flotilla, Norfolk, Va.
.....	11.4	800	45	.....	.....	.....do	School-ship, Massachusetts.
4,698	22.62	1,875	40	984	57.47	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
.....	a 16	7,500	1,500	.....	1,125.00	Not begun	To be built at a navy-yard.
2,964	a 10.5	a 800	160	1,440	.....	Under repair at Montreal.	En route to the naval militia of Ohio.
9,912	30.13	5,600	76	2,250	108.31	.....do	Navy-yard, Mare Island Cal.
1,490.44	9	300	80	a2,500	.....	Fair	Loaned to naval militia, District of Columbia.
9,460	12.4	2,395.03	340	a1,680	226.38	Good	North Atlantic Fleet, training midshipmen.
5,260	24.53	2,000	43	1,235	50.82	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
4,763	22.05	1,750	40	.....	51.92	.....do	Navy-yard, Mare Island Cal.

c At 14 knots (estimated).

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter. H.P.	Cylinder diameter. I.P.	Cylinder diameter. L.P.	Stroke.	Number and type of boilers.	Total grate surface.
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Frolic	Converted gunboat.	607	Vertical, triple expansion, 1 screw.	14½	23⅛	36½	24	1 single-ended Scotch, 1 auxiliary.	45
Galveston	Cruiser	3,100	Vertical, triple expansion, 2 screws.	18	29	*b* 35½	30	6 Babcock & Wilcox.	300
Gen. Alava	Transport	1,390	Vertical, triple expansion, 1 screw.	17	27	45	30	Cylindrical, horizontal return-fire tubular.	81.6
Georgia	First-class battle ship.	14,948	Vertical, triple expansion, 2 screws.	35	57	*b* 66	48	24 Niclausse	1,451.5
Glacier	Supply boat	*a* 7,000	Vertical, triple expansion.	30	48	78	54	3 double-ended return-fire tubular; 1 single-ended auxiliary.	264
Gloucester	Converted gunboat.	786	do	21	32	54	30	2 Scotch single-ended.	
Goldsborough.	Torpedo boat.	247⅛	Vertical, triple expansion, 2 screws.	19⅝	31¾	*b* 35¾	20	3 Thornycroft	216
Grampus	Submarine torpedo boat.	120	Otto gasoline engine. *c* Electric motor. *d*						
Gunboat No. 16.									
Gwin	Torpedo boat.	46	Vertical, triple expansion, 1 screw.	12⅛	18	25	13½	1 Normand	38
Hancock	Converted cruiser.		3 cylinder, vertical, triple expansion, 1 screw.	33⅛	56	92	65½	3 double-ended Scotch, 2 single-ended Scotch.	468
Hannibal	Collier	4,291	Vertical, triple expansion.	20½	33	54	39	2 horizontal return tubular.	
Hartford	Cruiser	2,790	Horizontal, compound, 1 screw.	35		66	48	4 single-ended cylindrical.	186.4
Helena	Light-draft gunboat.	1,392	Vertical, triple expansion, 2 screws.	14½	22	33¾	18	4 Hohenstein.	
Hopkins	Torpedo-boat destroyer.	467	do	22	32¼	*b* 34	18	4 Thornycroft	294
Hull	do	449	do	22	32¼	*b* 34	18	do	294
Holland	Submarine torpedo boat.	74	Otto gasoline engine. *c* Electric motor. *d*						
Idaho	First-class battle ship.	13,000	Vertical, triple expansion, 2 screws.	25½	42	69	48	8 Babcock & Wilcox.	768
Illinois	do	11,565	do	33¾	51	78	48	8 single-ended cylindrical.	685
Indiana	do	10,288	do	34½	48	75	42	8 Babcock & Wilcox.	616
Iowa	do	11,340	do	39	55	85	48	3 double and 2 single-ended cylindrical.	756
Iris	Distilling ship	6,100	Vertical, compound, condensing.	31		70	48	2 double-ended Scotch; 1 donkey.	154

a Estimated. *b* Two low-pressure cylinders. *c* Surface.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
1,295	a 11	a 550	80	1,920	.....	Good	Asiatic Fleet.
13,200	a 16.5	4,500	800	a 6,925	405	88 per cent completed	Wm. R. Trigg Co., Richmond, Va., and under completion, Norfolk Navy-Yard, Va.
1,855	10	770	120	2,200	.....	Fair	Asiatic Station (out of commission).
57,225	a 19	a 19,000	a 1,700	a 3,800	.....	87.75 per cent completed	Bath Iron Works, Bath, Me.
7,310	a 12.3	1,650	1,070	5,680	.....	Good	Ordered Boston Navy-Yard, to go out of commission.
.....	17	a 2,000	93	1,150	.....	Fair	South Atlantic Squadron (tender).
13,500	a 30	5,850	131	.....	.....	90 per cent completed	Navy-yard, Puget Sound, Bremerton, Wash.
.....	CS. 45 a 7.3	160	e 850	.....	.....	Good	Navy-yard, Mare Island, Cal.
.....	.....	.....	.....	.....	.....	Contract not awarded	.....
1,870	20.88	850	8	500	15.6	Under repairs	Reserve Torpedo Flotilla, Norfolk, Va.
14,578	.....	4,000	2,570	.....	.....	Good	Receiving ship, New York.
.....	a 10	a 1,100	275	4,500	.....	do	Collier service in Mediterranean.
6,340	12	2,000	260	.....	a 290	do	North Atlantic Fleet, coast squadron.
4,800	15.5	1,988	271	2,300	185.18	do	Asiastic Fleet.
17,612	29.02	8,456	150	.....	205.7	do	With midshipmen's training squadron.
17,612	28.03	9,119	150	.....	a 189	do	Second Torpedo Flotilla.
.....	8	50	.....	.....	.....	do	U. S. Naval Academy, Annapolis, Md.
32,640	a 17	10,000	.....	.....	.....	2.38 per cent completed	Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.
21,649	17.149	12,898.7	1,297	4,259	1,278.77	Good	European Squadron.
19,194.6	15.55	9,738	1,550	4,600	1,241.85	Under repairs	New York Navy-Yard.
24,082.2	17.69	12,105	1,600	4,500	1,292.87	Good	European Squadron.
4,918	10.5	a 1,300	2,100	10,000	.....	Under repairs	Mare Island Navy-Yard.

a Submerged.

e Gallons gasoline.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter. H.P.	Cylinder diameter. I.P.	Cylinder diameter. L.P.	Stroke.	Number and type of boilers.	Total grate surface.
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Isla de Cuba	Gunboat	1,125	Horizontal, triple expansion, 2 screws.	18½	29	43	24	2 gunboat	148.5
Isla de Luzon	do	1,125	do	18½	29	43	24	do	148.5
Justin	Collier	3,300	Vertical, triple expansion.	21	35	57.5	39	2 single-ended return fire tubular.	72
Kansas	First-class battle ship.	16,000	Vertical, triple expansion, 2 screws.	32½	53	b61	48	12 Babcock & Wilcox.	1,100
Katahdin	Harbor defense ram.	2,155	Horizontal, triple expansion, 2 screws.	25	36	56	36	2 double and 1 single ended cylindrical.	354
Kearsarge	First-class battle ship.	11,525	Vertical, triple expansion, 2 screws.	33.5	51	78	48	3 double and 2 single ended cylindrical.	685
Kentucky	do	11,525	do	33.5	51	78	48	do	685
Lancaster	Cruiser	3,250	Single, horizontal, back-acting.	60¼	.....	60	36	2 main and 2 auxiliary horizontal, tubular.	342
Lawrence	Torpedo-boat destroyer.	412	Vertical, triple expansion, 2 screws.	22	31	b34	20	4 Fore River	304
Lawton	Converted cruiser.	.....	3 cylinder, vertical, inverted, triple expansion, 1 screw.	28	44	70	65½	6 single-ended cylindrical.	288
Lebanon	Collier	3,375	Vertical, triple expansion.	19	30	50	30	2 Scotch single-ended.	209
Leonidas	do	4,242	do	20.5	33	54	39	2 Clark type; 1 donkey, Cochran type.	.....
Louisiana	First-class battle ship.	16,000	Vertical, triple expansion, 2 screws.	32½	53	b61	48	12 Babcock & Wilcox.	1,097
Machias	Gunboat	1,177	do	15.75	22.5	35½	24	2 gunboat	120
Macdonough	Torpedo-boat destroyer.	405	do	22	31	b34	24	4 Fore River	304
Mackenzie	Torpedo boat	65	Vertical, triple expansion, 1 screw.	12	19.25	b22	16	2 Thornycroft	40
Maine	First-class battle ship.	12,500	Verticle, triple expansion, 2 screws.	38.5	59	92	42	24 Niclausse	1,358
Manila	Transport	1,800	2 cylinder compound.	32	.....	61	39	2 single-ended Scotch; 1 vertical auxiliary.	117
Manly	Torpedo boat	30	Single screw	.....	.....	.....	.....	.....	.....
Marblehead	Unprotected cruiser.	2,089	Vertical, triple expansion, 2 screws.	26.5	39	63	26	3 double and 2 single ended cylindrical.	414
Marcellus	Collier	4,400	Vertical, compound inverted.	38	.....	66	60	2 return-fire tubular.	.....
Marietta	Composite gunboat.	1,000	Vertical, triple expansion, 2 screws.	12	18	28	18	2 Babcock & Wilcox.	94
Maryland	Armored cruiser.	13,680	do	38½	63½	b74	48	16 Babcock & Wilcox.	1,600

a Estimated.

b Two low-pressure cylinders.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
5,508.5	13.08	807	160	1,920	.....	Under repairs	Out of commission, Portsmouth, N. H., Navy-Yard.
5,508.5	11.23	534.7	160	1,920	.....	.....do	Navy-yard, Pensacola, Fla.
3,196	a 10.9	.....	167	3,300	.....	Good	Collier service.
46,750	a 18	a16,500	a2,200	.....	.....	15 per cent completed..	New York Shipbuilding Co., Camden, N. J.
12,150	16.11	5,068	202	1,000	413.34	Good	Navy-yard, League Island, Pa. (out of commission).
22,104	16.8	11,954.37	1,573	5,316	1,195	.....do	European Squadron.
22,104	16.9	12,318.41	1,591	5,360	1,197	.....do	New York Navy-Yard.
4,330	a 9.7	1,000	326	.....	.....	Poor.....	Navy-yard, League Island, Pa.
18,117	28.5	a 8,400	115	.....	a 189	Good	Second torpedo flotilla, Norfolk, Va.
10,164	.....	2,000	.....	.....	.....	Fair	Navy-yard, Mare Island, Cal. (intended for receiving ship).
.....	12.5	.....	250	.....	.....	Good	Collier service; Atlantic coast.
.....	a 9.5	1,100	550	5,000	.....	Fair	Do.
52,752	a 18	a16,500	2,200	5,000	.....	45.6 per cent completed.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
4,590	15.46	1,873	290	4,500	143.7	Under repairs	Out of commission, Pensacola Navy-Yard.
18,117	28.03	a 8,400	115	a1,920	a 189	99.9 per cent completed.	Fore River Ship and Engine Co., Quincy, Mass.
2,168	20.11	1,192	15.3	720	26.6	Good	Reserve torpedo flotilla, Norfolk, Va.
58,104	18	15,840.8	1,803	.....	1,599.03	.....do	Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.
3,191	a 11	800	200	2,160	.....	Poor.....	Navy-yard, Mare Island, Cal., out of commission.
.....	17	250	.....	.....	.....	Good	U. S. Naval Academy, Annapolis, Md.
11,058	18.44	5,450	335	2,900	429	.....do	Pacific Squadron.
.....	a 11	1,200	210	.....	.....	Under repair, Norfolk..	Collier service; Atlantic coast.
3,664	13.02	1,054	236	3,760	110.15	Good	European Squadron.
70,944	a 22	a23,000	2,000	.....	.....	87 per cent completed ..	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.

c Surface. d Submerged.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter.			Stroke.	Number and type of boilers.	Total grate surface.
				H.P.	I. P.	L. P.			
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Massachusetts.	First-class battle ship.	10,288	Vertical, triple expansion, 2 screws.	34.5	48	75	42	4 double and 2 single ended cylindrical.	616
Mayflower...	Converted cruiser.	2,690	.....do.....	22.5	38	40 *a*	27	2 single-ended cylindrical and 1 vertical.	212
McKee.....	Torpedo boat.	65	Vertical, triple expansion, 1 screw.	12	19.25	22 *a*	16	2 Thornycroft	40
Miantonomoh.	Double-turret monitor.	3,990	Compound, inclined, 2 screws.	32	.....	48	42	6 single-ended cylindrical.	369
Michigan....	Paddle-wheel cruiser.	685	Inclined, simple.	36	.....	36	96	2 flue and return-fire tubular.	91
Milwaukee..	Protected cruiser.	9,700	Vertical, triple expansion, 2 screws.	36	59½	69 *a*	45	16 Babcock & Wilcox.	1,400
Minneapolis.	.....do.....	7,375	Vertical, triple expansion, 3 screws.	42	59	92	42	8 double and 2 single ended cylindrical.	1,520.2
Minnesota...	First-class battle ship.	16,000	Vertical, triple expansion, 2 screws.	32½	53	61 *a*	48	12 Babcock & Wilcox.	1,100
Mississippi..	.....do.....	13,000	.....do.....	25½	42	69	48	8 Babcock & Wilcox.	768
Missouri.....	.....do.....	12,500	.....do.....	34.75	53	63 *a*	48	12 Thornycroft.	1,000
Moccasin....	Submarine torpedo-boat.	122.55	Otto gasoline engine. *c* Electric motor. *c*	.....	.....	.....	.....	.....	.....
Mohican	Cruiser.....	1,900	Horizontal, back-acting, compound.	42	.....	64	42	4 cylindrical, return-fire, tubular.	128
Monadnock .	Double-turret monitor.	3,990	Horizontal, triple expansion, 2 screws.	19.75	30.75	52.75	30	4 single-ended cylindrical.	200
Monocacy...	Light-draft gunboat.	1,370	Paddle-wheel, inclined, simple.	58.05	.....	.....	10.5	2 main rectangular, 2 horizontal, return tubular.	146.3
Montana	Armored cruiser.	14,500	Vertical, triple expansion, 2 screws.	38.5	63.5	74 *a*	48	.....	.....
Monterey....	Barbette turret, low free-board monitor.	4,084	Vertical, triple expansion, 2 screws.	27	41	64	30	4 Babcock & Wilcox.	.....
Montgomery	Unprotected cruiser.	2,089	.....do.....	26.5	39	68	26	3 double and 2 single-ended cylindrical.	368.43
Morris.....	Torpedo-boat.	105	.....do.....	12.5	18	25	13.5	2 modified Normand.	80
Nanshan	Collier.....	4,827	Vertical, triple expansion.	23	38	61	42	2 cylindrical, return-fire, tubular, 1 donkey.	120
Nashville....	Light-draft gunboat.	1,719	Vertical, quadruple expansion, 2 screws.	11	17 / 24	34	18	4 Yarrow and 2 single-ended cylindrical.	142
Nebraska....	First-class battle ship.	14,948	Vertical, triple expansion, 2 screws.	35	57	66 *a*	48	12 Babcock & Wilcox.	1,342

a Two low-pressure cylinders. *b* Estimated.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
19,194.6	16.21	10,415	1,560	4,500	1,062	Good	North Atlantic Fleet, Battle-ship Squadron.
6,600	16.75	4,600	520	3,500		do	European Squadron.
2,294	19.82	850	15	720	22.68	do	Torpedo Station, Newport, R. I.
8,781	10	1,426	240	1,200	509.77	do	Out of commission, navy-yard, League Island, Pa.
2,572			125	2,240		do	Special service on Great Lakes.
64,000	22	21,000				58 per cent completed	Union Iron Works, San Francisco, Cal.
50,147	23.07	20,862	1,520	6,300	1,672	Good	North Atlantic Squadron.
52,752	[b]18	[b]16,500	[b]2,200			19.4 per cent completed.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
32,640	[b]17	10,000				2.89 per cent completed.	Wm. Cramp & Sons Shipbuilding and Engine Co., Philadelphia, Pa.
51,372	[b]18	[b]16,000	2,000		[b]1,130	Good	European Squadron.
	[c]8.416 / [d]7.241	160	[e]850			do	Torpedo Station, Newport, R. I.
3,284		[b]1,150	167			Fair	Training ship (landsmen).
6,242	11.63	2,163	386	2,600	292.8	do	Asiatic Fleet.
6,254	11.2	850	224	1,680		Fair	Ordered for sale.
		23,000				To be contracted for	
	13.6	5,244	207	1,430	451.92	Good	Asiatic Fleet, under repairs at Navy-yard, P. I.
10,978	19.06	5,584	335	2,900	401.27	do	Caribbean Squadron.
4,004	24	1,750	[b]28	[b]1,500	32.39	do	Newport, R. I., Torpedo Station.
3,365	11.2	1,400	417	4,224		Good	Asiatic Fleet.
5,350	16.3	2,536	395	3,400	170.74	Fair	North Atlantic Fleet, Boston Navy-Yard.
56,184	[b]19	[b]19,000	[b]1,700			71.8 per cent completed.	Moran Bros. Co., Seattle, Wash.

[c] Surface. [d] Submerged. [e] Gallons gasoline.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter.			Stroke.	Number and type of boilers.	Total grate surface.
				H. P.	I. P.	L. P.			
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Nero	Collier	4,925	Vertical, triple expansion.	23	37⅞	61½	39	2 single-ended cylindrical, 1 auxiliary vertical cylindrical.	90
Nevada	Single-turret monitor.	3,218	Vertical, triple expansion, 2 screws.	17	26½	40	24	4 Niclausse	220
Newark	Protected cruiser.	4,098	Horizontal, triple expansion, 2 screws.	34½	52 3/64	76 3/16	40	4 double-ended cylindrical.	540
New Hampshire.	First-class battle ship.	16,000	Vertical, triple expansion, 2 screws.	32½	53	b61	48		
New Jersey	First-class battle ship.	14,948	do	35	57	b66	48	12 Babcock & Wilcox.	1,342
New Orleans	Protected cruiser.	3,769	do	31	46	70	30	4 double-ended cylindrical, 1 small donkey.	480
Newport	Composite gunboat.	1,000	Vertical, triple expansion, 1 screw.	15.5	23.5	36	30	2 single-ended cylindrical.	78
New York	Armored cruiser.	8,200	4 vertical, triple expansion, 2 screws.	32	47	72	42	6 double and 2 single-ended cylindrical.	987.96
Nicholson	Torpedo boat.	232	Vertical, triple expansion, 2 screws.	18	27	b27.5	18	3 Mosher	157.5
North Carolina.	Armored cruiser.	14,500	do	38½	63½	b74	48		
O'Brien	Torpedo boat.	170	do	18	27	b27.5	18	3 Mosher	157.5
Ohio	First-class battle ship.	12,500	do	35.5	53	b63	48	12 Thornycroft.	924
Olympia	Protected cruiser.	5,870	do	42	59	92	42	4 double and 2 single-ended cylindrical.	824
Ontario	Collier	12,500	do	28	44½	75	54		
Oregon	First-class battle ship.	10,242	do	34.5	48	75	42	4 double and 2 single-ended cylindrical.	552
Paducah	Gunboat	1,000	do	9	15¼	25½	21	2 Babcock & Wilcox.	100
Panther	Converted cruiser.	4,260	Vertical, triple expansion, 1 screw.	25	41	67	42	4 single-ended Scotch, 1 auxiliary.	246
Paul Jones	Torpedo-boat destroyer.	475	Vertical, triple expansion, 2 screws.	20.5	32	b38	22	4 Thornycroft	315
Pennsylvania.	Armored cruiser.	13,680	do	38.5	63.5	b74	48	32 Niclausse	1,600
Perry	Torpedo-boat destroyer.	476	do	20.5	32	b38	22	4 Thornycroft	315
Petrel	Gunboat	892	Horizontal, compound, 1 screw.	25		46	33	2 cylindrical straightway	93.2
Philadelphia	Protected cruiser.	4,410	Horizontal, triple expansion, 2 screws.	38	58	86	40	4 double-ended cylindrical.	624

a Estimated.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
4,800	a 9	a 1,000	323	4,500	.....	Good	Collier service, Pacific Squadron.
8,876	13.04	2,003.7	335	a 1,680	274.91	.....do	North Atlantic Fleet, Midshipmen Training Squadron.
16,736.5	a 19	8,868	780	4,440	653	.....do	Caribbean Squadron.
.....	.....	a 16,500	.....	.....	.....	To be contracted for	.....
56,184	a 19	a 19,000	a 1,700	.....	.....	53.15 per cent completed.	Fore River Ship and Engine Co., Quincy, Mass.
14,378	a 21	7,500	743	4,400	.....	Fair	Asiatic Fleet.
2,524	12.29	1,009	234	3,500	109.69	Good	North Atlantic Fleet, Caribbean Squadron.
32,958	21	17,401	1,300	4,800	1,311.3	Fair	Pacific Squadron.
8,406	a 26	a 3,500	.....	.....	a 80	99.75 per cent completed.	Crescent Shipyard, Elizabethport, N. J., under completion at New York Navy-Yard.
.....	.....	23,000	.....	.....	.....	To be contracted for	.....
8,406	a 26	a 3,500	.....	.....	a 80	95.5 per cent completed.	Crescent shipyard, Elizabethport, N. J., under completion at New York Navy-Yard.
60,130	a 18	a 15,100	2,000	.....	a 1,130	.....do	Union Iron Works, San Francisco, Cal.
28,298.6	21.68	17,313	1,054	4,200	1,162.56	Good	European Squadron.
.....	16	7,500	1,500	.....	1,125	Not begun	To be built at a navy-yard.
17,460	16.79	11,111	1,540	5,300	1,009.23	Good	Asiatic Fleet.
4,200	a 13	a 1,000	200	.....	.....	41.28 per cent completed.	Gas Engine and Power Co., Morris Heights, N. Y.
.....	13	.....	700	4,800	.....	Good	North Atlantic Fleet, Caribbean Squadron.
17,783	28.91	8,000	.....	.....	201.25	.....do	Pacific Squadron.
68,308	a 22	a 23,000	2,000	.....	.....	85.74 per cent completed.	Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.
17,763	28.32	a 7,950	.....	.....	200.67	Good	Pacific Station, Bremerton Navy-Yard.
2,504.8	11.55	1,045	200	3,200	112.5	.....do	Pacific Squadron.
20,457	19.68	8,815	1,020	5,400	705.36	Fair	Receiving ship Puget Sound, Bremerton, Wash.

b Two low-pressure cylinders.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter. H.P.	Cylinder diameter. I.P.	Cylinder diameter. L.P.	Stroke.	Number and type of boilers.	Total grate surface.
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Pike	Submarine torpedo-boat.	120	Otto gasoline engine.[a] Electric motor.[b]						
Plunger	do	120	Otto gasoline engine.[a] Electric motor.[b]						
Pompey	Collier	3,085	Inverted, triple expansion.	19½	38	51	32	1 Scotch, 1 donkey.	74
Porpoise	Submarine torpedo boat.	120	Otto gasoline engine.[a] Electric motor.[b]						
Porter	Torpedo boat.	165	Vertical, triple expansion, 2 screws.	16	22.5	[b]25	16	3 modified Normand.	160.6
Prairie	Converted cruiser.	6,872	Vertical, triple expansion, 1 screw.	32	52	84	54	3 double-ended Scotch, 1 small auxiliary.	447
Preble	Torpedo-boat destroyer.	475	Vertical, triple expansion, 2 screws.	20.5	32	[b]38	22	4 Thornycroft	315
Princeton	Composite gunboat.	1,000	Vertical, triple expansion, 1 screw.	15¼	23.5	36	30	2 single-ended cylindrical.	78
Puritan	Double-turret monitor.	6,060	Horizontal, compound, 2 screws.	50	.....	86	42	8 single-ended cylindrical.	566
Rainbow	Distilling ship	6,200	Vertical, triple expansion, 1 screw.	28	44	72	48	2 Scotch double-ended.	246
Raleigh	Protected cruiser.	3,213	Vertical, triple expansion, 2 screws.	24	44.5	[b]57	33	8 Babcock & Wilcox.	506
Ranger	Cruiser	1,020	Horizontal, compound, back-acting.	28	.....	42	42	4 cylindrical return-fire tubular.	120
Reina Mercedes.	Protected cruiser.	3,090							
Relief	Hospital ship.	.....	3 cylinder vertical, inverted, triple expansion, 1 screw.	30	48	75	54	6 single-ended cylindrical.	447.75
Rhode Island	First-class battle ship.	14,948	Vertical, triple expansion, 2 screws.	35	57	[b]66	48	12 Babcock & Wilcox.	1,342
Rodgers	Torpedo boat.	142	do	12	19½	[b]22	16	2 Mosher	95
Rowan	do	182	do	14.5	23	[b]25½	18	3 Mosher	143.4
Salem	Scout	4,000	do						
San Francisco.	Protected cruiser.	4,098	Horizontal, triple expansion, 2 screws.	42	60	90	36	4 double-ended cylindrical.	553
Saturn	Collier	6,220	Vertical, triple expansion, inverted.	22	32	52	48	4 Scotch double-flue, 1 donkey.	.....
Scorpion	Converted gunboat.	850	Vertical, triple expansion.	15	24	39	21	4 main and 1 auxiliary Yarrow.	159.4
Shark	Submarine torpedo boat.	120	Otto gasoline engine.[a] Electric motor.[b]						
Shubrick	Torpedo boat.	189	Vertical, triple expansion, 2 screws.	14	22	[b]25½	18	3 Thornycroft.	137

[a] Surface. [b] Submerged. [c] Estimated.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
.....	{a 8.51 / b 7.18}	c 160	d 850	.....	.....	Good	{Navy-yard, Mare Island, Cal.
.....	{a 8.876 / b 7.2 8}	c 160	d 850	.....	.....	do	{Torpedo Station, Newport, R. I.
2,672	10.5	.....	203	.....	.....	do	Collier service, Asiatic Station.
.....	{a 8.4 / b 7.1}	c 160	d 850	.....	.....	do	{Torpedo Station, Newport, R. I.
8,288	28.63	.....	68	1,190	77.95	do	Reserve Torpedo Flotilla, Norfolk, Va.
10,506	c 14.5	c 3,800	1,370	8,200	.....	do	Atlantic Training Squadron.
17,782.9	28.08	7,370.5	.....	.....	201.23	do	Navy-yard, Mare Island, Cal.
2,524	10.63	923	239	3,800	104.46	Under repairs	Out of commission at Mare Island Navy-Yard, Cal.
13,280	c 12.5	3,700	310	1,140	.....	Good	Navy-yard, League Island, Pa. Ordered to be turned over to the Naval Militia of the District of Columbia.
6,119	c 12	c 1,800	1,121	4,872	.....	do	Asiatic Fleet. Under repair, Cavite Navy-Yard.
21,130	c 20	c 8,500	577	a 4,560	.....	do	Asiatic Fleet.
2,945	c 10	c 500	178	.....	.....	do	Out of commission, navy-yard, Puget Sound, Bremerton, Wash.
.....	.....	.....	.....	.....	.....	Unfit for sea	Navy-yard, Portsmouth, N. H. Receiving ship.
.....	.....	2,666	.....	.....	.....	Under repair	Navy-yard, Mare Island, Cal. Out of commission.
56,184	c 19	c 19,000	1,700	.....	.....	64.1 per cent completed.	Fore River Ship and Engine Co., Quincy, Mass.
5,260	24.5	2,411	44	1,200	50.82	Good	Reserve Torpedo Flotilla, Norfolk, Va.
7,890	27.07	8,200	60	1,800	82.71	do	Navy-yard, Puget Sound, Bremerton, Wash.
.....	c 24	c 16,000	1,900	.....	.....	To be contracted for	.....
19,656	19.52	10,604	650	4,000	749.12	Fair	Asiatic Fleet, under repair, Cavite Navy-Yard.
.....	11	1,500	335	3,500	.....	Good	Pacific coast collier.
8,384	17.85	2,800	133	2,200	.....	do	North Atlantic Fleet, tender to Battle-ship Squadron.
.....	{a 8.27 / b 7.28}	c 160	d 850	.....	.....	do	{Torpedo Station, Newport, R. I.
7,518	c 26	3,000	70	2,240	c 89	do	Reserve Torpedo Flotilla, Norfolk, Va.

d Gallons gasoline.

c Two low-pressure cylinders.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter: H.P.	Cylinder diameter: I.P.	Cylinder diameter: L.P.	Stroke.	Number and type of boilers.	Total grate surface.
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Solace	Naval transport.	4,700	Vertical, triple expansion, 1 screw.	28	44	74	54	3 double-ended Scotch, 1 single-ended auxiliary.	388
Somers	Torpedo boat.	145	Vertical, quadruple expansion, 1 screw.	17	24 / 33 3/32	42½	18½	1 locomotive type.	47
Southery	Prison ship	3,100	Vertical, triple expansion, inverted.	21	35	57½	39	2 single-ended return-fire tubular, 1 auxiliary vertical cylindrical.	.....
South Dakota	Armored cruiser.	b 13,680	Vertical, triple expansion, 2 screws.	38½	63½	b74	48	16 Babcock & Wilcox.	1,600
Sterling	Collier	5,663	Triple expansion.	20	32	53	42	1 Scotch, 1 auxiliary upright.	.....
St. Louis	Protected cruiser.	9,700	Vertical, triple expansion.	36	59½	69	45	16 Babcock & Wilcox.	1,400
Stewart	Torpedo-boat destroyor.	439	Vertical, triple expansion, 2 screws.	20.5	32	b38	22	4 Seabury	315
Stiletto	Torpedo boat.	31	Vertical, compound, 1 screw.	12	21	.....	12	1 Almy	29
Stockton	do	197	Vertical, triple expansion, 2 screws.	14	22	b25½	18	3 Thornycroft	137
Stringham	do	340	do	22	32½	b34	18	4 Thornycroft	252
Supply	Supply ship	4,460	Vertical, triple expansion, 1 screw.	23	36	60	36	1 main, 2 auxiliary, Scotch.	114
Tacoma	Cruiser	3,100	Vertical, triple expansion, 2 screws.	18	29	b35.5	30	6 Babcock & Wilcox.	300
Talbot	Torpedo boat.	46½	Vertical, triple expansion, 1 screw.	12.5	18	25	13.5	1 Normand	38
Tennessee	Armored cruiser.	14,500	Vertical, triple expansion, 2 screws.	38.5	63.5	b74	48	16 Babcock & Wilcox.	1,590
Terror	Double-turret monitor.	3,990	Inclined, compound, 2 screws.	32	.....	48	46	6 single-ended cylindrical.	378
Texas	Second-class battle ship.	6,315	Vertical, triple expansion, 2 screws.	36	51	78	39	4 double-ended cylindrical.	531.6
Thornton	Torpedo boat.	193	do	14	22	b25½	18	3 Thornycroft	137
Tingey	do	190	do	14	22	b25½	18	do	137
Topeka	Gunboat	2,372	Horizontal, compound, 2 screws.	35.5	.....	58	36	2 double and 2 single ended cylindrical.	273
Truxtun	Torpedo-boat destroyer.	486	Vertical, triple expansion, 2 screws.	23	34	b37	20	4 Thornycroft	300
Vermont	First-class battle ship.	16,000	do	32.5	53	b61	48	12 Babcock & Wilcox.	1,100
Vesuvius	Dynamite gun vessel.	929	do	21.5	31	b34	20	4 marine locomotive.	195
Vicksburg	Composite gunboat.	1,000	Vertical, triple expansion, 1 screw.	15	23.5	36	30	2 single-ended cylindrical.	78

a Estimated.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
10,910	a15	a3,200	1,163	7,000	.....	Good	Naval transport service to Manila.
2,242	a23	a1,900	30	.....	.....	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
.....	a11	.....	380	5,500	.....	Fair	Prison ship, Portsmouth (N. H.) Navy-Yard.
70,944	a22	a23,000	.....	.....	.....	63 per cent completed..	Union Iron Works, San Francisco, Cal.
.....	a11	a1,000	550	7,000	.....	Fair	Collier service, North Atlantic Coast.
64,000	a22	a21,000	.....	.....	.....	54.9 per cent completed.	Neafie & Levy, Philadelphia, Pa.
17,782	29.7	a8,000	139	.....	204.65	Good	Second Torpedo Flotilla, Norfolk, Va.
1,100	18.22	359	6	168	10.95	.....do	Torpedo Station, Newport, R. I.
7,548	25.88	3,000	70	1,680	88.64	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
16,020	a30	7,200	120	.....	.....	Ready for trial	The Harlan and Hollingsworth Co., Wilmington, Del.
3,827	.....	1,069	952	8,160	.....	Good	Station ship at Guam.
13,200	a16.5	a4,500	800	.....	a405	.....do	Pacific Squadron.
1,870	21.15	850	.....	.....	15.56	.....do	U. S. Naval Academy, Annapolis, Md.
68,000	a22	a23,000	2,000	.....	.....	38.5 per cent completed.	Wm. Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa.
8,781	a12	1,600	260	1,300	486.88	Good	U. S. Naval Academy, Annapolis, Md.
16,912.4	a17	8,610	830	2,900	692.64	.....do	North Atlantic Fleet, Coast Squadron.
7,548	27.57	3,000	70	.....	88.64	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
7,548	a26	3,000	70	.....	a80	.....do	Do.
8,462	a16	a2,200	394	3,800	.....	.....do	North Atlantic Fleet, Training Squadron.
19,743	29.58	8,300	185	.....	207.16	.....do	Second Torpedo Flotilla.
46,750	a18	a16,500	2,200	.....	.....	5.43 per cent completed.	Fore River Ship and Engine Co., Quincy, Mass.
8,981	21.65	4,295	145	1,800	214.93	Needs extensive repairs.	Navy-yard, Boston, Mass.
2,524	12.71	1,118	235	4,000	109.67	Fair	Ordered to Mare Island Navy-Yard to go out of commission.

b Two low-pressure cylinders.

Machinery data of United

Name of vessel.	Type of vessel.	Displacement.	Type of engine.	Cylinder diameter.			Stroke.	Number and type of boilers.	Total grate surface.
				H. P.	I. P.	L. P.			
		Tons.		*In.*	*In.*	*In.*	*In.*		*Sq. ft.*
Virginia	First-class battle ship.	14,948	Vertical, triple expansion, 2 screws.	35	57	66[b]	48	24 Niclausse	1,280
Vixen	Converted gunboat.	806	Vertical, triple expansion, single screw.	18	27	48	25	2 single-ended cylindrical, return-fire, tubular.	.....
Washington	Armored cruiser.	14,500	Vertical, triple expansion, 2 screws.	38.5	63.5	74[b]	48	16 Babcock & Wilcox.	1,600
Wasp	Converted gunboat.	630	Inverted, triple expansion.	21.5	31	34[b]	20	2 Scotch, 1 donkey.	.....
West Virginia	Armored cruiser.	13,680	Vertical, triple expansion, 2 screws.	38½	63½	74[b]	48	16 Babcock & Wilcox.	1,600
Wheeling	Composite gunboat.	1,000	.....do.....	12	18	28	18	2 single-ended cylindrical.	60
Whipple	Torpedo-boat destroyer.	481	.....do.....	23	34	37[b]	20	4 Thornycroft	300
Wilkes	Torpedo boat.	205	.....do.....	14	22	25½[b]	18	3 Seabury	137.4
Wilmington	Light-draft gunboat.	1,719	.....do.....	14.5	22	33.75	18	4 Hohenstein	.....
Winslow	Torpedo boat.	142	.....do.....	12	19¼	22[b]	16	2 Mosher	95
Wisconsin	First-class battle ship.	11,565	.....do.....	33.5	51	78	48	8 single-ended cylindrical.	640
Worden	Torpedo-boat destroyer.	476	.....do.....	23	34	37[b]	20	4 Thornycroft	300
Wyoming	Monitor	3,218	.....do.....	17	26¼	40	24	4 Babcock & Wilcox.	216
Yankee	Converted cruiser.	6,888	Vertical, triple expansion, 1 screw.	32	52	84	54	3 double-ended, 1 single-ended, Scotch.	458
Yankton	Converted gunboat.	975	.....do.....	18	29	47	33	1 single-ended, cylindrical, Scotch.	67
Yorktown	Gunboat	1,710	Horizontal, triple expansion, 2 screws.	22	31	50	30	4 straight-way cylindrical.	220
Zafiro	Supply ship	1,200	Compound	.....	.....	.....	....	Scotch	.....

[a] Estimated.

States naval vessels—Continued.

Total heating surface.	Trial speed.	Total maximum I. H. P.	Total bunker capacity.	Coal endurance at 10 knots per hour.	Total weight of machinery.	Present condition of machinery as per last report.	Present service.
Sq. ft.	*Knots.*		*Tons.*	*Knots*	*Tons.*		
57,554	a 19	a19,000	a1,700	.....	.....	65 per cent completed..	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
.....	a 16	a 1,250	170	3,000	.....	Fair	North Atlantic Fleet, Caribbean Squadron.
70,944	a 22	a23,000	2,000	.....	.....	28.6 per cent completed.	New York Shipbuilding Co., Camden, N. J.
.....	a 16.5	a 1,800	108	2,880	.....	Good	Special Gulf service.
70,944	a 22	a23,000	a2,000	.....	.....	91 per cent completed..	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
2,508	12.88	1,080	226	4,000	115.61	Good	Station ship, Tutuila, Samoa. Ordered to Bremerton Navy-Yard to go out of commission.
19,748	28.24	8,300	185	.....	207.45	.....do	Second Torpedo Flotilla, Norfolk, Va.
7,800	25.99	3,000	70	2,400	95.16	.....do	Reserve Torpedo Flotilla, Norfolk, Va.
.....	15.08	1,894	280	2,200	185.15	Fair	Asiatic Fleet.
5,260	24.82	2,000	42	1,200	50.82	Good	Torpedo Station, Newport, R. I.
21,205	17.17	12,609	1,295	4,200	1,278.08	.....do	Asiatic Fleet.
19,748	29.86	8,300	185	.....	207.48	.....do	Second Torpedo Flotilla.
8,800	11.8	2,451.69	380	.....	263.30	.....do	Pacific Squadron.
10,641	a 14	a 3,800	988	5,200	.....	.....do	North Atlantic Fleet Training Squadron.
1,872	a 14	a 750	170	2,640	.....	.....do	Special service.
8,092	16.14	3,392	370	3,300	264.82	Under repairs	Navy-yard, Mare Island, Cal. Out of commission.
.....	10.5	850	175	2,880	.....	Good	Asiatic Fleet.

b Two low-pressure cylinders.

Gunboats and converted yachts under 600 tons displacement.

Name of vessel.	Type of vessel.	Displacement.	I. H. P.	Speed.	Coal capacity.	Condition of machinery as per last report.	Present station.
		Tons.		*Knots.*	*Tons.*		
Aileen	Converted yacht	192	500	14	45	Good	Loaned to Naval Militia, New York.
Albay	Gunboat	151	[a] 125	[b] 8	25	do	Asiatic Station; out of commission.
Alvarado	do	100	.....	[b] 19	16	Fair	Naval Academy.
Arayat	do	137	(a)	[b] 10	33	Good	Asiatic Station, Cavite.
Basco	do	42	44	7	6.3	Fair	Asiatic Station.
Calamianes	do	151	[a] 125	8	25	Good	Do.
Callao	do	208	[a] 250	10	33	do	Do.
Dorothea	Converted yacht	594	1,558	14	78	do	Naval Militia, Illinois.
Eagle	do	434	850	15.5	65	do	Special service.
Elfrida	do	173	200	10.5	23	Fair	Naval Militia, Connecticut.
Elcano	Gunboat	560	[a] 600	11	93	Good	Asiatic Station.
Guardoqui	do	42	44	7	63	do	Pollok Naval Station.
Hawk	Converted yacht	375	1,000	14.5	70	do	Naval Militia, Ohio.
Hist	do	472	1,000	14.5	60	do	First naval district tender.
Hornet	do	424	800	15	70	do	Navy-yard, Norfolk, Va.
Huntress	do	82	.....	14	17	do	Naval Militia, New Jersey.
Inca	do	120	400	14	25	do	Naval Militia, Massachusetts.
Leyte	Gunboat	151	[a] 120	8	24	do	Asiatic Station.
Manileño	do	142	[a] 125	17	21	do	Do.
Mariveles	do	142	[a] 125	7	30	do	Do.
Mindanao	do	174	[a] 100	7	26.5	do	Do.
Mindoro	do	142	[a] 125	7	30	do	Do.
Oneida	Converted yacht	150	350	12	20	do	Naval Militia, District of Columbia.
Pampanga	Gunboat	201	[a] 250	10	33	do	Asiatic Station.
Panay	do	142	[a] 125	8	26	do	Do.
Paragua	do	201	[a] 250	8.8	33	Fair	Do.
Pinta	do	550	310	.....	220	Poor	Naval Militia, California.
Quiros	do	350	550	11	78	Good	Asiatic Station.
Restless	Converted yacht	137	500	13	16	Fair	Navy-yard, Norfolk.
Samar	Gunboat	210	250	10.5	33	Good	Asiatic Station.
Sandoval	do	100	666	8	16	Fair	Naval Academy.
Shearwater	Converted yacht	122	.....	12	12	Good	Naval Militia, Pennsylvania.
Siren	do	315	.....	13	45	Fair	Tender to Franklin.
Stranger	do	546	.....	14	50	Good	Naval Militia, Louisiana.
Sylph	do	152	550	15	40	do	Special service.
Sylvia	do	302	.....	9	60	do	Naval Militia, Maryland.
Urdaneta	Gunboat	42	44	8	6.5	.....	Asiatic Station.
Villalobos	do	347	500	.....	65	Good	Do.

[a] Twin screws. [b] Estimated.

Tugboats.

Name of vessel.	Displacement.	I. H. P.	Speed.	Coal capacity.	Condition of machinery as per last report.	Present service.
	Tons.		*Knots.*	*Tons.*		
Accomac	187	250	10	35	Under repair	Navy-yard, Pensacola, Fla.
Active	296	600	12	80	Good	Navy-yard, Mare Island.
Alice	356	250	10	15	do	Navy-yard, Norfolk.
Apache	650	550	10	120	Fair	Navy-yard, New York.
Chickasaw	100		10	20	Good	Do.
Choctaw	350	188	10	70		Navy-yard, Norfolk.
Fortune	450	340	10	80	Good	Pacific Squadron, tender.
Hercules	198		12	40	do	Navy-yard, Norfolk.
Iroquois	702	1,000	13.25	205	do	Naval station, Honolulu.
Iwana	192	300	11.5	35	do	Navy-yard, Boston.
Leyden	450	340	10	80	do	Torpedo station, Newport.
Massasoit	202			34	do	Naval station, Key West.
Modoc	241		10	40	do	Navy-yard, League Island.
Mohawk	420	400	12	22	do	Navy-yard, Norfolk.
Narkeeta	192	300	11.5	35	do	Navy-yard, New York.
Nezinscot	156	400	10	40	do	Navy-yard, Portsmouth, N. H.
Nina	357	388	11.12	80	do	Navy-yard, New York.
Osceola	571		14	140	Fair	Naval station, Pensacola.
Pawnee	275	250	10	16	Good	Navy-yard, New York.
Pawtucket	225	450	12.2	30	do	Navy-yard, Puget Sound.
Penacook	225	450	12	28	do	Naval station, Port Royal.
Pentucket					do	Navy-yard, New York.
Peoria					do	Newport, R. I., Training Station.
Piscataqua	631	2,000	16	328	Poor	Asiatic Station.
Pontiac	401	425	10.5	45	Good	Navy-yard, New York.
Potomac	677	2,000	16	200	do	Naval station, San Juan, P. R.
Powhatan	194	397	13	57	do	Navy-yard, New York.
Rapido	66				do	Asiatic Station.
Rocket						Navy-yard, Washington, D. C.
Samoset	225	450	12	30	Fair	Navy-yard, League Island.
Sebago	190		12	30	Good	Naval station, Pensacola.
Sioux	155	290	10	45	do	Navy-yard, Portsmouth, N. H.
Sotoyomo						Navy-yard, Mare Island, Cal.
Standish	450	340	10	80	Good	Naval Academy.
Tecumseh	214	500	11	40	Fair	Navy-yard, Washington.
Traffic	280		10		Good	Navy-yard, New York.
Triton	212	300	13	45	do	Navy-yard, Washington.
Unadilla	345	500	12	65	do	Navy-yard, Mare Island.
Uncas	441	750	12	120	Fair	Naval station, San Juan.
Vigilant	300	450	12	75	Good	Training station, Goat Island, Cal.
Waban	150		13	25	do	Navy-yard, Pensacola.
Wahneta	192	300	11.5	35	do	Navy-yard, Norfolk.
Wompatuck	462	650	13	130	do	Asiatic Station, Cavite Navy-Yard.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1906, by the Bureau of Steam Engineering, Navy Department.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1905.
SALARIES.			
Chief clerk (increase of $250 submitted)	$2,250.00		
1 clerk, class 3	1,600.00		
1 clerk, class 2	1,400.00		
1 clerk, class 1	1,300.00		
1 clerk, class 1 (this clerk is employed in the office of the Assistant Secretary of the Navy)	1,200.00		
1 clerk of class 1, stenographer and typewriter (submitted)	1,200.00		
1 clerk, Class E	1,100.00		
3 clerks, Class E, $1,000 each	3,000.00		
1 clerk of Class E, stenographer and typewriter (submitted)	1,000.00		
1 clerk, Class C	840.00		
1 assistant messenger	720.00		
2 laborers, at $660 each	1,320.00		
2 laborers, at $600 each	1,200.00		
1 messenger boy	600.00		
1 draftsman, class 2	1,400.00		
1 assistant draftsman, class 1	1,200.00		
1 clerk of class 1, indexer and briefer of drawings (submitted)	1,200.00		
1 stenographer and typewriter, Class E	1,000.00		
1 stenographer and typewriter, Class E	900.00	$24,430.00	$20,780.00
One clerk of class 2 is regularly employed in this Bureau and borne on the rolls of the Hydrographic Office at $1,400 per annum. It is recommended that this clerk be appropriated for and borne on the rolls of the Bureau of Steam Engineering. None of the above employees are "below a fair standard of efficiency" for the ratings under which they are severally employed.			
DRAFTING FORCE. (Per diem pay from "Increase of the Navy" from limit fixed by Congress for Navy Department.)			
1 leading draftsman, at $7.04 per diem	2,203.52		
2 draftsmen, at $6.48 per diem each	4,056.48		
3 draftsmen, at $6 per diem each	5,634.00		
3 draftsmen, at 5.52 per diem each	5,183.28		
4 draftsmen, at $5.04 per diem each	6,310.08		
1 draftsman, $4.72 per diem	1,477.36		
1 draftsman, at $3.52 per diem	1,101.76		
1 draftsman, at $3.04 per diem	951.52		
1 draftsman, at $2.80 per diem	876.40		
		27,794.40	[a] 27,794.40
None of the above employees are "below a fair standard of efficiency" for the ratings under which they are severally employed.			
STEAM MACHINERY.			
For completion, repairing, and preservation of machinery and boilers of naval vessels, including cost of new boilers; distilling, refrigerating, and auxiliary machinery; preservation of and small repairs to machinery and boilers in vessels in ordinary, receiving, and training vessels; construction, repair, and care of machinery of tugs, launches, and yard craft	2,590,000.00	.....	2,190,000.00
For purchase, handling, and preservation of all material and stores; purchase, fitting, repair, and preservation of machinery and tools in navy-yards and stations, and running yard engines	1,500,000.00	.....	1,200,000.00
For incidental expenses for navy vessels, yards, and the Bureau, such as foreign postage, telegrams, advertising, expressage, photographing, books, stationery, office furnishings, and instruments	5,000.00		15,000.00
		4,095,000.00	3,405,000.00
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H.:			
1 clerk to department $1,200.00			
1 messenger 600.00			
	1,800.00	.....	1,800.00
Navy-yard, Boston, Mass.:			
1 clerk to department 1,400.00	1,400.00	.....	1,400.00

[a] Amount as now paid from appropriation "Increase of the Navy" for the current fiscal year ending June 30, 1905.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1906, by the Bureau of Steam Engineering, Navy Department—Continued.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1905.
Navy-yard, Brooklyn, N. Y.:			
1 clerk to department 1,400.00			
1 writer 1,000.00			
1 messenger 600.00			
	$3,000.00	.....	$3,000.00
Navy-yard, League Island, Pa.:			
1 clerk to department 1,200.00	1,200.00	.....	1,200.00
Navy-yard, Norfolk, Va.:			
1 clerk to department 1,300.00			
Increase submitted 100.00			
1 messenger 600.00			
	2,000.00	.....	1,900.00
Navy-yard, Pensacola, Fla.:			
1 writer 1,000.00	1,000.00	.....	1,000.00
Navy-yard, Mare Island, Cal.:			
1 clerk to department 1,400.00			
1 writer 1,000.00			
1 messenger 600.00			
	3,000.00	.....	3,000.00
Navy-yard, Port Royal, S. C.:			
1 clerk to department 1,200.00	1,200.00	.....	1,200.00
Navy-yard, Puget Sound, Wash.:			
1 clerk to department 1,200.00			
Increase submitted 200.00			
1 writer 1,000.00			
	2,400.00	.....	2,200.00
Navy-yard, Washington, D. C.:			
1 clerk to department 1,200.00	1,200.00	.....	1,200.00
		$18,200.00	17,900.00
These two small increases are recommended to make the pay of these clerks commensurate with the service performed and equal to pay of clerks in other yards and departments performing similar services.			
ENGINEERING EXPERIMENTAL STATION, U. S. NAVAL ACADEMY, ANNAPOLIS, MD.			
Salaries:			
1 civilian assistant to the director	3,000.00		
1 draftsman to engineering staff at the laboratory	1,800.00		
1 clerk to engineering staff at the laboratory	1,200.00		
1 skilled mechanic	1,200.00		
1 skilled mechanic	720.00		
1 messenger who shall also be janitor	600.00		
		8,520.00	.....
Contingent:			
For miscellaneous expenses, including postage, telegrams, advertising, stationery, reference books, technical periodicals, engineering, indices, etc	1,000.00	1,000.00	.....
Experimental and research work:			
For original investigation and extended experimentation of naval appliances; and for the purchase of such machines and auxiliaries considered applicable for test and use in the naval service	25,000.00	25,000.00	.....
		34,520.00	.....
IMPROVEMENT OF PLANT.			
Navy-yard, Portsmouth, N. H.:			
Necessary to furnish an almost entire new outfit of power tools; also to furnish a new power plant for which a building has already been appropriated	100,000.00	100,000.00	.....
Navy-yard, Brooklyn, N. Y.:			
Necessary to furnish new and additional tools for copper, boiler, machine, and pattern shops, and foundry, and for an additional portable tool house, and for a 30-foot locomotive crane	50,000.00	50,000.00	.....
Navy-yard, Pensacola, Fla.:			
For purchase of some modern tools for use in repair of naval vessels to replace others worn out	25,000.00	25,000.00	.....
		175,000.00	.....

Respectfully submitted.

C. W. RAE,
Engineer in Chief, U. S. Navy,
Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT OF THE PAYMASTER-GENERAL OF THE NAVY.

CHIEF OF THE BUREAU OF SUPPLIES AND ACCOUNTS.

NAVY DEPARTMENT,
BUREAU OF SUPPLIES AND ACCOUNTS,
Washington, October 1, 1904.

SIR: I have the honor to present the report of the Paymaster-General of the Navy upon the operations of the Bureau of Supplies and Accounts for the fiscal year ending June 30, 1904, accompanied by the estimates for the coming year, prepared in accordance with the Department's instructions of July 5, 1904, and tabulated statements as follows:

A.—General financial statement.
B.—Statement showing expenditures of money and material at shore stations, and objects to which applied.
C.—Statement showing operations of the Naval Supply Fund to June 30, 1904.
D.—Statement of payments through the Paymaster-General's Office on contract, open-purchase and open-contract vouchers.
E.—Statement showing the value of supplies on hand July 1, 1903, the receipts from purchase and other sources, the expenditures during the year and the balance on hand June 30, 1904.
F.—Statement of the value of stores received and expended on board ships in commission.
G.—Statement showing cost of maintaining ships in commission.
H.—Statement of public sales of Government property.
I.—Statement showing receipts and expenditures of provisions, contingent, clothing and small stores, and balances on hand June 30, 1904; also account of the clothing and small-stores fund for the fiscal year.
K.—Schedule of proposals received.

These statements cover all transactions involving expenditures for the naval establishment, and show in principal items as follows:

Total credits, including balance from last fiscal year	$167,609,697.37
Total debits	121,579,305.41
Leaving a balance of appropriations on June 30, 1904, of	46,030,391.96
Amount drawn from the Treasury	101,404,066.13
Expenditures on account of construction of new ships, including labor and material	31,403,948.81
Cost of repairs to ships and equipage at home and abroad	5,529,282.44
Cost of maintaining ships in commission (other than receiving ships), including pay of officers and men, subsistence and incidental expenses and material expended	19,242,327.40
Cost of maintaining receiving ships, including pay of officers and enlisted men, subsistence, and incidental expenses	3,026,992.80
Expenditures on account of the Marine Corps	2,996,679.97
Cost to the Navy:	
Of the Light-House Establishment	80,826.43
Of the Fish Commission	71,875.23
Of the naval militia of the several States	60,707.85
The deposits of savings by enlisted men during the year amount to	575,094.98
And the repayments	607,868.95
Total amount to the credit of the fund on June 30, 1904, was	860,020.28
Interest paid at 4 per cent per annum upon repayment amounted to	39,294.59

The embarrassment existing at the time of my last report, due to the limited number of

PAY OFFICERS AVAILABLE FOR DUTY

to meet the demand incident to the increased number of ships, has been much relieved by appointments made during the year; and I am pleased to report that, preliminary to their entrance upon independent duty, it has been practicable to assign nearly all of the newly appointed assistant paymasters for instruction on cruising ships—a practice impossible for some years because of the pressing demand for their immediate services.

I have already brought to the attention of the Department the very unsatisfactory method of recruiting the personnel of the Pay Corps, and have recommended that the utmost care be used in designating candidates for examination for appointment as assistant paymasters; but, even though the greatest care is exercised, it is not possible, under the present practice, to secure the best results; and I am convinced that the appointment and commissioning of young men as assistant paymasters in the Navy, without any probationary period of actual trial under service conditions, is unwise in the extreme.

This is the only corps in the Navy to which appointments may be made without any previous technical education or training on the part of the appointee; whereas, under the laws and regulations, even warrant officers, mates, and chief petty officers are, before appointment, required to qualify in the technical duties which they are expected to perform. It does not seem appropriate that the examination prior to the appointment of a commissioned officer in any corps should be less thorough than those required for warrant officers and persons of inferior ratings; and it is believed that, in addition to the entrance examination now required of applicants for appointment as assistant paymasters, it would be expedient to require another examination, at the end of one year, to determine the adaptability and actual efficiency of the candidate before he is commissioned.

To this end, and in order that the age of assistant paymasters may be brought into more direct proportion to the importance of the duties which they are called upon to perform, I recommend that section 1379 of the Revised Statutes be amended to read as follows:

SECTION 1379. No person shall be appointed assistant paymaster until he has served one year as an acting assistant paymaster, nor until his physical, mental, moral, and professional qualifications have been examined and approved by a board of pay officers appointed by the Secretary of the Navy, and according to such regulations as he may prescribe. And no person shall be appointed acting assistant paymaster who is, at the time of such appointment, less than twenty-three or more than twenty-eight years of age, nor until his physical, mental, and moral qualifications have been examined and approved by a board of pay officers appointed by the Secretary of the Navy, and according to such regulations as he may prescribe: *Provided*, That acting assistant paymasters shall have the rank of ensign and the pay and allowances of assistant paymaster with the rank of ensign: *And provided further*, That the Secretary of the Navy shall have the right to revoke the appointment of any acting assistant paymaster who shall have conducted himself in such manner as to indicate his unfitness for the naval service.

THE STATUS OF PAYMASTERS' CLERKS

is most unsatisfactory. As was pointed out in my last annual report, their duties are important and exacting. They have the status of officers, so far as responsibility is concerned, and their full share of

the hardships incident to the service; but practically none of the advantages, particularly with reference to the important question of pay and allowances.

Commissioned officers, warrant officers, petty officers and enlisted men have all recently received legislative consideration; but in no instance for many years has any act been passed containing even a clause for the relief of paymasters' clerks. I, therefore, submit the following draft of a bill which, if enacted into law, would ameliorate the condition of this most deserving class of public servants, and, in my opinion, tend to promote the best interests of the service:

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, That clerks to pay officers of the Navy, appointed under existing law, shall be temporarily warranted from time to time by the Secretary of the Navy, upon nomination by officers of the pay corps of the Navy, approved by the Navy Department; and, during the period of their service, shall have the same pay and allowances as other warrant officers of corresponding length of service; and that they may be retired, at the discretion of the Secretary of the Navy, under the provisions of this act, after thirty years' accumulated service, with three-quarters of the full pay of such warrant officers: *Provided,* That no person shall be retired under the provisions of this act until he shall have attained the age of sixty-two years; and the period, or periods, during which he may be, or has been, awaiting assignment or appointment shall not be construed to count as service; that upon completion of the duty of a pay officer entitled to the services of a clerk, the warrant of said clerk shall be void until he shall again be nominated by an officer of the pay corps for temporary warrant; that, for the purposes of fixing rates of pay and computing length of service for retirement, all pay clerks shall be credited with previous service in the Navy, or in the Army or Marine Corps; that, upon the passage of this act, clerks to pay officers, who have thirty years' accumulated creditable service, and who have reached the age of sixty-two years, may, upon their own application, be retired from active service, as hereinbefore provided; that pay clerks serving under temporary warrants may be retired from active service for disabilities incurred in the line of duty, as now provided by law for other officers.

The present practice of enlisting

PAYMASTERS' YEOMEN

as landsmen for training, and requiring their promotion through the grades of yeoman third class, yeoman second class, and yeoman first class—one grade each year—before attaining the grade of chief yeoman, has not been productive of good results. The complement of almost all ships in commission includes one chief pay yeoman; and yet there are at this time so many of these billets being filled by yeomen of inferior ratings that it practically amounts to maintaining on board ship a school for pay yeomen rather than a pay department properly equipped for actual work.

During the year ending June 30, 1904, the net loss afloat on pay-department stores amounted to over $45,000—a large portion of which was directly attributable to incompetent yeomen; and, in addition, clothing and small stores condemned because of deterioration, brought at auction $25,000 less than cost—a loss also largely due to the same cause. A pay yeoman's duties can be satisfactorily performed by any responsible and intelligent man, even though he has gained his experience exclusively on shore, no previous naval training being necessary; and the records show that the pay allowed for the yeomen of inferior ratings will not procure the services of satisfactory men. The difference in pay would be well invested, as it would undoubtedly tend to very materially decrease the losses on paymasters' stores; and it is recommended that the present regulations be so modified that enlist-

ments as chief yeoman in the Pay Department may be made direct from civil life, without requiring the candidate to pass through the several successive grades to attain that rating—candidates to be examined by a board of pay officers under such rules as the Department may prescribe.

Considerable progress has been made during the past year toward the proper systematizing of the

PURCHASE OF SUPPLIES.

General Order No. 165 promulgated to the service the views of the accounting officers of the Treasury on the subject of purchases, and also contained specific instructions on the kindred questions of waiving competition, purchase by selection, and the procuring of proprietary articles.

The law as it now stands leaves much room for doubt as to the propriety of open purchase and open contract in many cases; whereas the immediate needs of the service, arising daily, create emergencies which can not be foreseen or prevented, and which could not be adequately met if the administrative officers of the Navy Department were obliged to submit to the delay incident to newspaper advertising.

The constant effort of this Bureau is to carry out in good faith the law requiring such advertisement and to require formal contract whenever practicable, authorizing exceptions only when the circumstances will not admit of avoidable delay.

It is believed that, with a general and intelligent compliance with the terms of General Order No. 165 (and the articles of the regulations therein quoted), and of such additional instructions as may be necessitated thereby, it will be practicable to limit emergency purchases to such cases as really require exemption from advertising, and thus carry out the letter and spirit of the law as construed by the accounting officers of the Treasury, without materially inconveniencing the service.

THE LACK OF PROMPT INSPECTION OF SUPPLIES

and consequent delay in making payments to contractors has, undoubtedly, cost the Government much money, by increasing the price of stores. To remedy this unnecessary evil, General Order No. 161, which requires prompt inspection at all yards, or a daily report in writing explaining cause of delay, was recently promulgated; but reasonably prompt payment for supplies, after inspection, is a reform which has not yet been brought about. The present formality preliminary to payment is largely unnecessary, is vexatious to contractors, and very expensive to the Government; for it is not reasonable to suppose that dealers will quote lowest market prices on articles for which payment will probably be delayed for several weeks, and sometimes even for months. I have brought this entire subject to the attention of the Department in a previous communication, recommending a briefer and simpler form of voucher and an improved method of preparation and payment thereof. When this simplification is effected, it will remove the cause for most of the well-founded complaints now made; and, at the same time, save the Government a large amount of money every year by making navy business more attractive to the business community.

NEW STOREHOUSES ARE NEEDED

at several of the yards to properly protect the stock of valuable supplies which must be maintained; and, among the many demands, the following are pointed out as absolutely necessary: A new timber shed at Portsmouth, N. H.; an oil house (and paymaster's office) at Boston, Mass.; a lumber house (and the fireproofing of building No. 33) at New York, N. Y.; a lumber shed and yard at League Island, Pa.; a general storehouse at Washington, D. C.; a general storehouse (and an oil house) at Norfolk, Va.; a lumber shed and steel storehouse at Charleston, S. C.; general storehouses at San Juan and Guantanamo; a paint and oil house at Pensacola, Fla.; a storehouse for provisions and clothing (and extension of oil house) at Mare Island, Cal.; and an addition to the general storehouse at Puget Sound, Wash.

With the exceptions noted above, I believe that the most pressing need at this time is not so much for the erection of additional storehouses as for the proper disposition and economical use of those already erected and authorized. The question of reducing purchases (and relieving the congestion in storehouses) has been the subject of considerable correspondence during the past year, and I have at all times maintained that the best interests of the service demand the most critical discrimination in the purchase of supplies to the end that stock may not be allowed to accumulate unduly; and that supplies on hand be used wherever possible, thus lessening the probability of the

ACCUMULATION OF DEAD STOCK.

Large quantities of materials carried for some time past as dead stock, at certain yards, have, during the year, been transferred to and used at other yards. It is not desired to deplete the active stock at any yard or to have the supply on hand reduced below probable needs in the reasonably near future. But it seems most improvident to buy, for example, at New York or Norfolk what is already on hand in large quantities at Boston or Portsmouth; and, for the purpose of both curtailing purchases and protecting the already acquired stock from deterioration and waste (as well as from the possibility of becoming obsolete) I beg to renew the recommendation recently transmitted to the Department by letter accompanying draft of proposed general order limiting purchases near the end of a fiscal year to bona fide needs of that year, and directing the transfer, under certain conditions, of supplies in excess of requirements at one yard to meet immediate needs at another yard.

Even allowing a reasonable latitude in the matter of transferring stores from one yard to another, and thereby limiting purchases to a certain extent, the question of dead stock and concomitant losses will undoubtedly continue to cause the Department serious concern as long as the present system of

RESERVATION OF SUPPLIES

remains unrestricted. By reservation I mean not only the permanent reservation for certain work of such materials as are purchased for a particular purpose, but more especially the reservation during the fiscal year in which purchased for the exclusive use of one yard department of supplies purchased under that department's appropriations. The pres-

ent system entails the maintenance, at most of the stations, of duplicate stocks of the same article in many instances, and although the act of June 30, 1890, distinctly stipulates that "all supplies purchased with moneys appropriated for the naval service shall be deemed to be purchased for the Navy, and not for any bureau thereof," it is often more difficult for the head of one yard department to obtain necessary stores already on hand at the same yard by transfer from stock purchased for another department than to procure them by purchase outright. I am aware that there are many reasons for maintaining for each department an adequate stock of supplies peculiarly adapted for use by that department; but I refer now to materials in common use by each of several departments, and, in my opinion, the purchase of such articles under any conditions which can subordinate an actual present need to a possible future demand is wrong in principle and wasteful in practice.

After a thorough consideration of this subject in all its phases, I am convinced that the consolidation of such purchases under the

NAVAL SUPPLY FUND

system offers the most practical and economical solution of this important problem.

Although the present working capital of the Naval Supply Fund is only $2,700,000, it has been the means of great saving to the Government by the exercise of intelligent conservatism in laying in, at minimum prices, such quantities of articles in general use throughout the Navy as would be utilized within a reasonable time.

Under the separate purchase system, several departments may each maintain a large stock of articles in reserve for possible emergencies; whereas, if purchase from the Naval Supply Fund were possible, only one stock need be maintained for all departments. When it is remembered that the possibility of an emergency which would require an unusual supply of the same article simultaneously in each of the several departments is exceedingly remote, it is evident that the reserve necessary to be maintained in one combined stock would be much less than the total reserve now maintained in the several stocks—an advantage which, considered by itself, is sufficient to demonstrate the desirability, if not indeed the necessity (from the standpoint of efficient and economical administration) of so increasing the Naval Supply Fund as include the purchase and handling of all articles of common use in the service.

An examination of the tabulated statements showing the respective receipts, expenditures and balances under the Naval Supply Fund and general stock (where the purchases were made under particular appropriations) shows that the supply-fund system reduces to the lowest minimum practicable the tendency to buy in excess of present needs, and that it thus limits the accumulation of an excessive stock of supplies destined to deteriorate or become obsolete.

As fully explained in my last annual report, the Naval Supply Fund is not an appropriation for direct expenditure, but simply a fund advanced as working capital—being reimbursed from other appropriations as its stock is drawn for use—remaining always intact and an available asset of the Government, either in stock or in unexpended balance to its credit in the Treasury.

I earnestly recommend that the Naval Supply Fund be increased at once to $5,000,000, and that the proceeds of sales of all condemned stores (except clothing and small stores, ordnance, and unserviceable vessels) be credited to this fund instead of being covered into the Treasury. The Bureau's estimates include an item for the transfer to the fund of the necessary $2,300,000 from the unexpended balances in the Treasury under the appropriations "Pay of the Navy, 1902," and "Pay of the Navy, 1903."

THE GENERAL STOREKEEPER SYSTEM,

while by no means perfect, is believed to be the plan best adapted for Navy use. The bookkeeping feature is at least sufficiently elaborate, if not, indeed, too complicated. This subject has already received a great deal of attention, and I propose to continue my efforts in the direction of simplification and the elimination of all unnecessary formality.

The pay of the storemen (those who are employed in the actual keeping and handling of the property for which the general storekeeper is responsible) is in general too low to secure the services of first-class men; and, as a rule, the men employed to handle and record the receipts and expenditures of stores lack the clerical ability and familiarity with the stores they handle to enable them to perform their duties acceptably. The most ideal system of bookkeeping can not be expected to prove satisfactory so long as the men who actually handle the stores and originate the records thereof are so ill equipped for the proper performance of their duties.

Bearing in mind the fact that the stores themselves are of infinitely more importance than the books, and believing it to be absolutely essential that storemen should be selected from only those sufficiently experienced and intelligent to insure the efficient performance of their duties, I recommend that the pay of this rating be increased sufficiently to secure the services of thoroughly competent men, and that an examination be required of each of those now serving as such before they can be promoted to the higher rate of pay.

The development of the

SUPPLY SHIP SYSTEM

has been steady and satisfactory during the past year. The *Culgoa* and, for a part of the time, the *Glacier* were used for this purpose; and it has been possible to keep in almost constant touch with the majority of the vessels comprising the several squadrons of the North Atlantic fleet, as well as to supply with fresh provisions and other needed stores, the combined fleets during the winter maneuvers, and the forces in Panama, both afloat and ashore. Although immense quantities of fresh meats and vegetables have been handled, the losses from deterioration have been comparatively inconsiderable, and the general results most gratifying.

If the supply-ship system is to be extended and further improved, it will be necessary to secure, without delay, several additional vessels for this duty. And, if the officers and men are to be trained to accustom themselves to conditions which would exist in time of war, there should be attached to each fleet or squadron, as an integral part thereof, at least one supply vessel, which should be exempt from all other

duty; and the shipment of stores by any other means should be discontinued as far as possible. Meanwhile, it is believed that the best results are not obtained from having the movements of a supply ship changed from time to time on short notice; and it is recommended that the movements of supply ships be governed, in the main, by recommendations of the Chief of the Bureau of Supplies and Accounts, inasmuch as the sole value of a supply ship depends upon the effective distribution of the cargo, for which this Bureau is, by regulation, held responsible.

No matter how efficient may be the administration of the supply-ship system, however, the

PROVISION STOREROOMS AFLOAT

should be enlarged, so that, in the absence of the supply ship, the vessels themselves may be properly equipped for duty which takes them away from their base of supplies. At the present time, the provision spaces on board ships are quite out of proportion to the space assigned for other purposes. In fact, it has recently come to my attention that on several ships of war the provision storerooms are not sufficient to accommodate rations enough to last the crew for six weeks. The necessity for increasing the space assigned for the storage of provisions is immediate and imperative, because, although provisions are, in time of peace, somewhat more generally procurable in the various markets of the world than are other ship's stores, it would, nevertheless, be quite as impossible, in time of war, to replenish the supply of provisions as to procure oil, waste, ammunition, or any other of the articles to which so much space is now devoted. And it is a fact that a ship of war may be in need of coal, ammunition, or other stores of great importance, and still be not entirely useless; whereas a full supply of all of these stores would amount to naught without the men to use them; and the maintenance of an effective crew is, of course, impossible unless adequate subsistence be always provided.

THE NAVY RATION

at present authorized is a vast improvement over anything hitherto tried; and the general mess, under the administration of pay officers, has during the year been for the most part satisfactory. The ration, however, is still imperfect, owing to the lack of fresh fruit, fresh milk, fresh eggs, fresh fish, and several small items, such as sauces, spices, and flavoring extracts; and experience has shown that the present allowance of rice, macaroni, pickles, and molasses is excessive, while the allowance of canned vegetables is insufficient.

In order, therefore, to bring the navy ration up to the proper standard required for actual and adequate subsistence (by permitting all reasonable elasticity), and at the same time to avoid appreciable increase of the cost of its component parts, it is recommended that sections 1580 and 1581, Revised Statutes, be amended to read as follows:

SEC. 1580. The navy ration shall consist of the following daily allowance of provisions to each person: One pound and a quarter of salt or smoked meat, with three ounces of dried or six ounces of canned or preserved fruit, and three gills of beans or pease, or twelve ounces of flour; or one pound of preserved meat, with three ounces of dried or six ounces of canned or preserved fruit and eight ounces of rice or twelve ounces of canned vegetables, or six ounces of desiccated vegetables; together with

one pound of biscuit, two ounces of butter, four ounces of sugar, two ounces of coffee or cocoa, or one-half ounce of tea and one ounce of condensed milk or evaporated cream; and a weekly allowance of one-quarter pound of macaroni, four ounces of cheese, four ounces of tomatoes, one-half pint of vinegar or sauce, one-quarter pint of pickles, one-quarter pint of molasses, four ounces of salt, one-half ounce of pepper, one-eighth ounce of spices, and one-half ounce of dry mustard. Seven pounds of lard, or a suitable substitute, shall be allowed for every hundred pounds of flour issued as bread, and such quantities of yeast and flavoring extracts as may be necessary.

SEC. 1581. The following substitution for the components of the ration may be made when deemed necessary by the senior officer present in command:

"For one and one-quarter pounds of salt or smoked meat or one pound of preserved meat, one and three-quarter pounds of fresh meat or fresh fish, or eight eggs; in lieu of the articles usually issued with salt, smoked, or preserved meat, one and three-quarter pounds of fresh vegetables; for one pound of biscuit, one and one-quarter pounds of soft bread or eighteen ounces of flour; for three gills of beans or pease, twelve ounces of flour or eight ounces of rice or other starch food, or twelve ounces of canned vegetables; for one pound of condensed milk or evaporated cream, one quart of fresh milk; for three ounces of dried or six ounces of canned or preserved fruit, nine ounces of fresh fruit; and for twelve ounces of flour or eight ounces of rice or other starch food, or twelve ounces of canned vegetables, three gills of beans or pease; in lieu of the weekly allowance of one-quarter pound of macaroni, four ounces of cheese, one-half pint of vinegar or sauce, one-quarter pint of pickles, one-quarter pint of molasses, and one-eighth ounce of spices, three pounds of sugar, or one and a half pounds of condensed milk, or one pound of coffee, or one and a half pounds of canned fruit, or four pounds of fresh vegetables, or four pounds of flour.

"An extra allowance of one ounce of coffee or cocoa, two ounces of sugar, four ounces of hard bread or its equivalent, and four ounces of preserved meat or its equivalent shall be allowed to enlisted men of the engineer and dynamo force who stand night watches between eight o'clock postmeridian and eight o'clock antemeridian, under steam."

The general commutation of rations for enlisted men in the Navy should be discontinued without delay, as such commutation and the consequent maintenance of a separate business organization and semi-official purchasing department for the general mess are dangerous and demoralizing in the extreme, and not, in actual practice, conducive to the best interests of the naval service.

THE PAYMENT OF BILLS FOR TRANSPORTATION OF FREIGHT,

for telegraph services, and for advertising, would be greatly expedited if the cost of such services were payable from a single appropriation. A single shipment of stores to a vessel may, and often does, embrace supplies for several different departments; and, though they are forwarded at the same time and by the same line, it is now necessary to prepare separate bills of lading for each lot, and vouchers, in triplicate, for the freight charges, under each appropriation concerned. Similarly, in advertising for supplies, and in the payment of telegraph bills, the expense must be prorated among different appropriations, involving the preparation of an unnecessary number of vouchers, with consequent increase of clerical work. Were a single appropriation chargeable with such expenses, one set of bills of lading in the case of shipments, and one set of vouchers in all cases, would suffice; the accounts would be greatly simplified, and the vouchers and records could be handled with great economy of time and labor, not only at navy-yards and stations, but in the Navy and Treasury Departments as well.

It is recommended, therefore, that the contingent appropriation for this Bureau be so broadened in scope and increased in amount as to cover all expenses of this character except for freight charges on fuel purchased under appropriation "Coal and Transportation."

DEALINGS WITH TRANSPORTATION COMPANIES

will undoubtedly be considerably simplified by such changes in previous methods as were authorized by General Order No. 170, recently promulgated. This order eliminates much of the unnecessary formality which has hitherto rendered naval business so troublesome to the railroad companies; and it is expected that, with these changes, and with such further modifications as experience may demand, naval business will eventually be raised to the standard of commercial practice.

There is no essential difference between the cost of travel and the incidental expense of subsistence; and I recommend that, in order to do away with the very annoying meal-ticket system, one appropriation be made to bear the expense of both transportation and subsistence, thus making it possible to consolidate contracts for the two classes of service and to expedite settlement therefor.

PROMPT PAYMENT OF TRAVEL CLAIMS.

A great deal of delay—amounting in many cases to a real hardship to the officers concerned—has, in the past, been caused by the routine required in the settlement of claims for reimbursement of officers traveling abroad, and officers performing repeated travel between the same places within the United States, who are allowed actual expenses in lieu of mileage. In addition to the delay in the settlement of these claims, it has been customary to reduce the amounts for actual necessary expenses as rendered according to a more or less arbitrary standard; and, in order to notify the entire service of just what maximum amounts will be allowed in each case, Special Order No. 63 was recently published. It is believed that the carrying out of this order will tend to expedite settlements to a great extent, particularly as it authorizes payments abroad to be made, in certain cases, by pay officers afloat, without referring the claims, in advance, to Washington.

In order to conform more nearly to commercial usage in the matter of certain

ADVANCE PAYMENTS FOR SERVICES

(and in line with the provisions of the deficiency act approved April 27, 1904) it is recommended that section 3648 of the Revised Statutes be amended to read as follows:

No advance of public money shall be made in any case whatever, except when required by commercial usage to secure the performance of services, in which case a certificate to that effect shall accompany vouchers rendered to the accounting officers of the Treasury; in all other cases of contracts for the performance of any service or delivery of articles of any description for the use of the United States, payment shall not exceed the value of the service rendered or of the articles delivered previous to such payment. It shall, however, be lawful, under the special direction of the President, to make such advances to the disbursing officers of the Government as may be necessary to the faithful and prompt discharge of their respective duties, and to the fulfillment of the public engagements. The President may also direct such advances as he may deem necessary and proper, to persons in the military and naval service employed on distant stations, where the discharge of the pay and emoluments to which they may be entitled can not be regularly effected.

THE WORK OF THE CLOTHING FACTORY

was, during the past year, greater in volume than ever before, the value of the total output being $717,366.73.

The most rigid inspection of this important work is maintained throughout its progress, and it is believed that the cost of uniforms for enlisted men of the Navy is kept at the minimum under the present piece-work system, according to which the garment makers call for and take out the work and put the garments together at their respective homes, being paid on a pay roll at a fixed price of so much per garment. If, however, the methods of administration of the clothing factory were so modified as to require all such piecework to be done within the factory under the immediate supervision of the foreman and his assistants, a more effective inspection would be possible, and such a change, in addition to decreasing the present danger of infection on account of sickness in the homes of the operatives, would in general prove more businesslike and satisfactory.

THE CLERICAL FORCE

in the Bureau of Supplies and Accounts is not nearly so efficient as it should be, because the initial rate of pay is too low and opportunities for advancement are too meagre.

It has been the practice to appoint copyists, bookkeepers, and stenographers at $2.48 and $2.80 per diem, and (since the making of per diem appointments has been discontinued) at $840 per annum, while employees in other departments enter the service at $900 per annum. As many of the applicants for civil-service positions specify $900 per annum as the lowest acceptable salary, it is evident that any establishment which offers less than that amount can not expect to be on an equal footing with its more liberal competitors.

Nine hundred dollars per annum may appear ample for beginners, and particularly as compared with salaries paid to clerks in commercial establishments; but the entrance examination required of civil service clerks is calculated to exclude all except those who possess, at least, more than the average of clerical ability; and, as a matter of course, it is with other branches of the Government service, rather than with commercial establishments, that this Bureau must compete in securing its clerical force.

Another great disadvantage arises from the fact that the number of highly paid clerkships in the Bureau of Supplies and Accounts is, proportionately, so small that really deserving clerks in the lower grades have very little to look forward to; and, consequently, a great many of them seek transfer to other Departments where opportunities for promotion are more favorable. Of the 83 clerks allotted to this Bureau, only 16 receive more than $1,200 per annum; and, for the reasons already stated, there is constantly in progress a shifting of the personnel by the transfer of good men, whose vacancies are filled (at the bottom) by less valuable men, thus greatly lowering the standard of efficiency.

To remedy this evil, which is becoming, indeed, very serious, I recommend that the $840 positions be abolished and that a number of higher grade positions be authorized, sufficient to place this Bureau on at least an approximately equal footing with those of other Departments with regard to pay and promotion.

Very respectfully,

H. T. B. HARRIS,
Paymaster-General, U. S. Navy.

The SECRETARY OF THE NAVY.

REPORT OF THE SURGEON-GENERAL U. S. NAVY.

DEPARTMENT OF THE NAVY,
BUREAU OF MEDICINE AND SURGERY,
Washington, D. C., October 1, 1904.

SIR: In obedience to instructions contained in Department's letter of July 5, 1904, I have the honor to submit a report of the operations of this Bureau for the year ending June 30, 1904.

The report embraces a statement of reasons for increase of estimates and of the condition of the naval hospital fund, matters relating to the Medical Corps, the Hospital Corps, and to the naval hospitals, with recommendations for their improvement, recommendations as to hospital ships, report on infections on training and receiving ships and training stations, report on surgical operations, recommendations as to barracks for recruits, report on navy pensions, recommendation as to the utilization of the services of Bureau and Medical Corps in an advisory capacity on all matters of sanitary importance affecting the naval personnel, recommendations as to establishment of a camp for care of tuberculous patients, recommendation as to membership on general board and board of inspection and survey, recommendation as to book of instructions for the Medical Corps, recommendations as to dentists and women nurses, report on Naval Museum of Hygiene and Medical School, estimates for the fiscal year ending June 30, 1906, report on the health of marine brigade, Isthmus of Panama and the statistical report for the year, together with reports of special sanitary, medical, and surgical interest.

ESTIMATES.

In submitting estimates for the fiscal period ending two years hence, due allowance must be made for increasing expense of meeting the needs of the medical establishment of a steadily growing service. Demands incident to the commissioning of additions to the fleet, the maintenance of a large number of vessels already in service, the establishment of new naval stations, the development of those already established, and the increase of the personnel must be provided for by larger appropriations for the various funds controlled by the Bureau.

To these causes the necessity for several increases over estimates for the fiscal year ending in 1905 is attributed. It should be remembered that the hospital establishments of the Navy were designed for the accommodation of a service not exceeding the strength of 15,000, and are, consequently, in general, inadequate for the proper care of the sick and injured of an enlisted personnel now numbering, including apprentices and the Marine Corps, an aggregate force of about 40,000 individuals. The necessity for hospitals of greater capacity has naturally followed. There is need for remodeling and extending nearly all of the important naval hospitals, more particularly those at Chelsea, Mass., Newport, R. I., Norfolk, Va., and Pensacola, Fla. In furtherance of the purpose of removing the medical staff from the hospital buildings, with a view to gaining as much additional ward space as practicable, the Bureau submits an estimate for quarters for medical

officers at naval hospitals at Chelsea, Mass., Newport, R. I., and Pensacola, Fla.

Estimates are also submitted under "Public works" for the completion and renovation of hospital buildings, as follows:

For the naval hospital, Washington, D. C., $40,000, to enable the Bureau to complete the building upon the original plans, and $20,000 for the erection of an additional ward, $60,000 in all.

For the construction of a building for naval hospital purposes at Sitka, Alaska, $10,000.

For the renovation of the present hospital buildings and for the erection of new wards at Norfolk, Va., $200,000.

For the renewal of the present hospital buildings and for the erection of quarters for the medical staff, naval hospital, Pensacola, $50,000.

For the acquisition of additional land adjacent to the naval hospital, Yokohama, Japan, $3,000.

NAVAL HOSPITAL FUND.

The condition of this fund is as follows:

Balance on hand July 1, 1903	$254,339.61
Transferred to the credit since July 1, 1903	317,099.32
Credit by appropriation for fiscal year 1903	40,000.00
Total	611,438.93
Expended since July 1, 1903	346,180.22
Balance on hand June 30, 1904	$265,258.71

MEDICAL SERVICE AT SAMOA AND GUAM.

The professional services of the medical officer stationed at Tutuila, Samoa, have been freely given to the natives and as freely availed of. Medical supplies have been furnished as urgent needs and the dictates of humanity demanded. The medical officer reports that during the year the entire native population has been vaccinated with vaccine virus supplied by the Bureau. At Guam the medical officers have rendered most valuable service to the native population, which is entirely dependent upon them for professional care. Without medicines, and without means or doctors other than the Navy has supplied, it has been impossible to avoid furnishing certain medical supplies when suffering and necessity alike made appeals for help. By giving systematic instruction and training in the requirements of modern and hygienic care to an intelligent class of women, a number of native midwives have been provided through the efforts of the medical officers, whose ministrations have accomplished much good to the ignorant and impoverished families to be found at this naval station. It is the opinion of the Bureau that the medical officers who have been stationed at Guam and at Tutuila have most worthily served the cause of humanity and are deserving of praise for efficient and self-sacrificing professional services to the natives at both of these insular possessions.

NAVAL HOSPITALS FOR CHARLESTON, S. C., GUANTANAMO, CUBA, AND OLONGAPO, P. I.

The development of the naval stations at Charleston, S. C., at Guantanamo, Cuba, and at Olongapo, P. I., makes it necessary to

invite attention to the fact that a naval hospital will be required at each of these localities. The question of appropriate sites has been under consideration, and the erection of suitable buildings should not be too long deferred. The completion of the hospital at Canacao, P. I., with a supplementary sick quarters at Olongapo, P. I., will supply needed accommodations for awhile in the Philippines, but at Guantanamo the need is more urgent, and it is recommended that Congress be asked to make provision for the construction of a hospital at this locality adequate to the demands of the station. The urgency of the need of a hospital at Charleston, S. C., will be dependent upon the rapidity of progress made in completion and utilization of the extensive plant projected and being provided at this locality. The Bureau recommends that timely action be taken to secure an appropriation for the erection of a suitable hospital at each of these naval stations in advance of urgent need of provision for the care of the sick.

MEDICAL CORPS.

The Board of Medical Examiners for admission of assistant surgeons has remained in continuous session during the year, and every effort has been made to fill the vacancies in the Medical Corps. At the end of the year 1903 there remained 2 vacancies. On January 1, 1904, the annual increase allowed by the Fifty-seventh Congress added 25 more, and, with 3 retirements for disability, the total vacancies to be filled numbered 30. Many inquiries for information regarding the examination have been received, and numerous permits have been issued to applicants. Further intelligence of the opportunity to secure commissions in the Medical Corps was spread by personal visits to leading medical colleges in the East and Middle West by the president of the Naval Medical School, who, by invitation, addressed the various bodies of medical students on the subject. Of the 99 applicants who appeared for examination 23 were found qualified and granted commissions. It was thought that the favorable legislation of 1903, giving rank for grade and increasing the number of surgeons and establishing a closer parallelism between the army and navy medical establishments, would so serve to popularize the naval medical service among qualified young professional men as to make recruiting for it an easy matter. The Bureau regrets to state that unexpected difficulty has been encountered.

In this connection it is not thought amiss to note the fact, in some measure explanatory, that the present pay of the assistant surgeon of the Navy while on shore duty is 15 per cent less than the pay received by the assistant surgeon of the Army, and also to invite attention to certain general considerations relative thereto. Requirements for graduation at the leading medical colleges of the United States include attendance for a period of four years employed in the study of professional subjects. The requirements for admission to the Medical Corps of the Navy are such that an applicant must have had some clinical and practical training, which involves an addition of about one year of actual professional work to his four years course at the medical school. The necessity for maintaining a reasonably high standard of intelligence and scholarship among the members of the Medical Corps is responsible for the fact that only about 23 per cent of applicants are successful. In securing qualified men the Medical Corps of the Navy has to compete with the Medical Corps of the Army and the Public

Health and Marine-Hospital Service, both of which have long been, among young professional men, more popular branches of the Government medical service. It is stated now, however, that the Army medical service is not popular with clever and ambitious young professional men of the country because of insufficient inducements as a career, and if this be so it is not difficult to understand, in view of the lower rate of pay offered, why the Medical Corps of the Navy fails to be as attractive to the same class.

There has always been difficulty in securing qualified medical men for the Navy. Recent legislation giving assistant surgeons of the Navy the rank, pay (less 15 per cent for shore duty), and allowances of assistant surgeons of the Army, has more nearly equalized the advantages offered by the two branches of the military service. There is sound reason for a comparison of the status and pay of these two grades, inasmuch as they perform the same kind of service for the Government, are drawn from the same civilian source, have practically identical qualifications, and it would seem best for the public service that there be equalization of their emoluments in every detail. The highest interest of the entire naval personnel, official and enlisted, is too seriously involved in the success of the effort now being made to secure and maintain the highest state of professional efficiency in the Medical Corps for it to be wise to place it at a disadvantage, in comparison with the medical staff of the Army, by offering inferior inducements to civilian medical men who might be inclined to enter the naval service.

ACTING ASSISTANT SURGEONS.

Active employment has been found for the acting assistant surgeons, and without the aid secured from their employment the Bureau would have had more serious embarrassment in meeting the service demands for medical officers than has been experienced. Much of the recruiting duty with traveling parties has fallen to these medical officers. Considering their lack of experience with service conditions, their work has been fairly efficient and satisfactory. This exigency of service has, no doubt, been the reason that only 9 out of 25 authorized by law have qualified for admission to the regular medical establishment. Appointments to this grade are limited to applicants coming within the age limits prescribed for entry as assistant surgeon, with the idea that the more industrious and ambitious members would subsequently seek entry into the regular corps. It is the desire of the Bureau to keep the acting list full and utilize it as a waiting list for promising candidates qualifying for a commission in the regular establishment, and at the same time to supply relief to an overworked corps.

INCREASE IN GRADES OF MEDICAL DIRECTOR AND MEDICAL INSPECTOR.

In its last annual report the Bureau renewed its recommendation of the previous year that the grade of medical inspector be increased, and stated that it had been necessary in responding to demands for details of medical officers for fleet duty to draw upon the senior ten numbers of the grade of surgeon for assignments that properly belonged to the medical inspector's grade. There are now afloat nine squadrons under the command of flag officers, to each of which a medical inspector should properly be assigned; but with the total

number available for duty this is impracticable, keeping in view the needs elsewhere. There are important details beyond seas—at Cavite, P. I., Yokohama, Japan, and upon the hospital ship *Relief*—which require officers of this grade, and these, together with the demands at shore stations, and on boards where officers of experience are required, create a necessity for an increase in this grade.

The line officer of the former engineer corps with corresponding rank is, under the law, not assigned to sea duty. The medical inspector is very much older than, and senior in rank to, other officers of the wardroom, where his living quarters are, and this circumstance does not lessen for him the burden of sea duty. It is not for the best interests of the service that a larger proportion of time at sea should be exacted of medical inspectors than is required of the corresponding rank in the line. The personnel act of March 3, 1899, made no provision for increase in any grade of the Medical Corps, but materially increased the upper grades of the line—that of commander from 85 to 103, and that of captain from 45 to 68. In 1903, however, Congress granted a large increase in the three lower grades of the Medical Corps but no increase in the two higher grades. There are now the same number of medical directors and medical inspectors (with a medical corps prospectively increased by existing law to 345 and with an aggregate strength of about 40,000 men in the Navy and Marine Corps) as was allowed in 1883, when the Medical Corps numbered 171 and when the enlisted force of the Navy and Marine Corps was 16,000. In 1883 the number authorized in each of these grades was a little less than 9 per cent of the whole corps; in 1904 the percentage has fallen to 6+, and in 1908, when the Medical Corps reaches its authorized strength, it will be further reduced to 4+ per cent.

CHANGE OF TITLES OF OFFICERS OF THE MEDICAL CORPS.

In the report of the preceding year comment was made upon the lack of military significance in the titles given the officers in the different grades of the Medical Corps, and upon the unsuitableness of the terms "assistant surgeon" and "passed assistant surgeon" as applicable to professional men of the age and attainments of these officers, who are frequently in independent charge of the medical department of a ship or station. The various grades in the Medical Corps are well defined, but their designations convey no idea of the rank of a medical officer in the naval service. There is an honorable pride felt by every medical officer in the distinction conferred by the familiar title of doctor and surgeon, and there is no desire to subordinate the professional title to the military one, but there is a proper feeling and desire that titles distinctly setting forth his official rank in the Navy, as well as his grade in his special corps, should be given the medical officer. The Bureau renews its recommendation that Congress be asked for legislation changing the name of the different grades of the Medical Corps now existing, as follows: In place of surgeon-general, surgeon-admiral; and in the other grades, medical director to become surgeon-captain; medical inspector, surgeon-commander; surgeon, surgeon-lieutenant-commander; passed assistant surgeon, surgeon-lieutenant, and assistant surgeon, surgeon-lieutenant (junior grade).

NAVAL MEDICAL SCHOOL.

The Naval Medical School, at the beginning of its second year, was in a more thorough condition of preparedness for all its work than in the initial session of last year, and it is now on a firm footing. The completion of improvements in the museum building to meet the requirements of larger classes increased the facilities for instruction, and supplies adequate accommodations. Thirty-one recently commissioned assistant surgeons, forming the second class of student officers, were assembled in October, 1903. The course of special training outlined in the previous report of the Bureau was actively pursued for a period of five and a half months, and the session ended with appropriate graduating exercises held in the hall of the National Museum on March 21, 1904.

The manifest appreciation of the privileges afforded by the school on the part of the students, and the industry displayed, has demonstrated the utility of the prescribed course. With the broadening of the field of professional training, there has resulted an increase of efficiency for performance of the details of the duties of a medical officer, in which the naval service has a decided and continuous interest. The instructors at the school have been at the same time performing the duties of members of the Medical Examining Board, and their work has been able and earnest.

The school has been most fortunate in having the hearty interest and sympathetic cooperation of the local medical profession. Most efficient and courteous assistance has been given by the Army Medical School and the medical department of the Columbian University. The work of instruction by the faculty has been supplemented in the most valuable way by the gratuitous assistance of eminent scholars and scientists, whose lectures enriched the course and whose services have been highly appreciated. Among these gentlemen were Col. W. C. Gorgas, Maj. L. A. La Garde, Lieut. James Carroll, and Dr. William M. Gray, of the Medical Corps of the U. S. Army; Dr. Charles W. Stiles and Passed Asst. Surg. M. J. Rosenau, of the Public Health and Marine-Hospital Service; Prof. L. O. Howard, entomologist of the Department of Agriculture; Dr. Juan Guiteras, of Habana, Cuba, and Dr. William N. Cogan, dean of the faculty of the dental department of Georgetown University.

The following members of the second class attained the distinction of securing over 90 per cent of the total general average marks, and in the order named, viz: W. W. Verner, R. L. Sutton, F. W. S. Dean, B. H. Dorsey, A. J. Geiger, J. P. DeBruler, P. S. Rossiter, C. F. Ely, C. E. Ryder, J. R. Dykes, W. B. Smith.

It is the purpose of the Bureau to enlarge the sphere of usefulness of this school by extending the privileges of its laboratories and course of special instruction to medical officers of the Navy whenever the increase of the corps has removed the necessity for continuous active service of the medical officers and when the public exigency permits their being so employed for brief periods. The professional benefit of such a course will be very great, and the naval service at large will be the gainer thereby.

HOSPITAL CORPS TRAINING SCHOOL.

The work of training the Hospital Corps has been actively and systematically carried on in the school at the Norfolk Naval Hospital, classes averaging 42 students being assembled as the exigency of the service allowed. So far 200 members have attended the course, about 25 per cent of the force. Upon completion of the course the apprentices have been sent to the various naval hospitals for further practical training before assignments to sea duty. A scheme for the continued instruction in the details of their duty, after assignment to vessels, has been devised under the supervision of the Bureau, which, it is hoped, will soon be enforced as a part of the routine drill on board ship, and will accomplish much good. The schedule of study and drill at the school has been fully reported in a former annual report, and remains the same with the addition of a short course in clinical microscopy for hospital stewards. Physical exercises and athletic sports have been encouraged, an athletic outfit being provided, and the interest, industry, and conduct of the apprentices have been most favorably commented upon. Surg. Middleton S. Elliott, U. S. Navy, is in charge of the school, with the same competent assistants as reported in the previous year.

NAVAL HOSPITAL CORPS.

The conduct and work of the Hospital Corps during the year has been highly satisfactory. With exception of a few hospital stewards, possessing special qualifications or being graduates in pharmacy, recruiting has been confined to transfers from other branches of the service and original enlistments in the rating of hospital apprentice. The corps numbers, approximately, 775 men, 25 per cent of whom have been given the course of instruction in the school for training at the naval hospital, Norfolk, Va. The organization has reached a stage of development and efficiency which leads the Bureau to hope that it will soon be practicable to supply the rate of hospital steward entirely by men promoted from the lower ratings. Considering the fact that legislation authorizing a Hospital Corps for the Navy was enacted only six years ago, the progress made in the effort to secure for the service a class of trained nurses is a cause for gratification. There is need for a considerable increase in the number of men now employed in the Hospital Corps, and it is regretted that desirable recruits are so few.

The Bureau has been convinced by its study and observation of this corps that its efficiency is much hampered by unsatisfactory provisions of the law authorizing it. The name of hospital apprentice, first class, is a most unsuitable one for a trained nurse, and the pay is insufficient to hold the men of this rating in the service. It is most significant that there are very few—practically no—re-enlistments in this rate. So it appears that these men, unless rated hospital steward, leave the service for more lucrative employment, and unless there is a change of condition it is idle to expect to hold permanently trained nurses in the Navy. Under existing law the pay of a hospital steward is $60 per month, the pay of a hospital apprentice, first class, is $30, and the pay of a hospital apprentice is $20 per month. With such pay the hospital apprentice, first class, is not long satisfied. The Bureau submitted recommendations for legislation to reorganize and increase

the efficiency of the Hospital Corps, which were approved by the Department, but upon which Congress did not take action. These recommendations are renewed and are as follows:

First. That the Hospital Corps of the Navy shall consist of chief pharmacists, pharmacists, hospital stewards, baymen (first class), baymen, and hospital apprentices.

Second. That the number of chief pharmacists and pharmacists on the active list shall not exceed 50 in all, the pharmacists to be appointed by the President and have the status of warrant officers; vacancies in the grade of pharmacist to be filled from men holding the rating of hospital steward, subject to such examination as may be prescribed by the Secretary of the Navy; that no pharmacist shall be promoted to the rank of chief pharmacist until he shall have passed an examination as to his mental, moral, physical, and professional qualifications before a board of officers, in accordance with regulations prescribed by the Secretary of the Navy, and that all provisions of law relating to warrant officers of the Navy shall extend to and include all pharmacists of the Hospital Corps.

Third. That the pay of hospital stewards shall be $70 per month; of baymen (first class), $40 per month during their first five years of service and $50 per month thereafter; of baymen, $30 per month, and of hospital apprentices, $20 per month, with such increase for length of service as may now or hereafter be allowed other enlisted men of the Navy.

Fourth. That as many enlisted men of the ratings of hospital steward, bayman (first class), bayman, and hospital apprentice shall be enlisted as may in his judgment be fixed by the Secretary of the Navy; that they shall be a part of the enlisted force provided by law, and that enlisted men of the Navy and Marine Corps shall be eligible for transfer to the Hospital Corps.

Fifth. That the members of the Hospital Corps shall be permanently attached to the Medical Department of the Navy, and that all necessary hospital and ambulance service at naval hospitals, naval stations, navy-yards, and marine barracks, and on vessels of the Navy and Fish Commission shall be performed by members of this corps.

In the opinion of the Bureau such a reorganization of the Hospital Corps is most desirable, and it is urgently recommended that Congress be asked to enact necessary legislation to effect this end.

COMMAND IN THE HOSPITAL CORPS.

Associated with the progressive development of the Hospital Corps along lines of greatest utility to the naval service and increased efficiency is the matter of well-defined military control of its personnel by the medical officers of the Navy. The responsibility for success or failure in results lies with the medical officers who must educate and drill and train for special technical duties the men composing this corps, and full and well-defined authority should be accorded to work out the problem, old-time service prejudices and antagonisms giving place to a harmonious acceptance of new conditions and needs, to the end that the best interests and good of the service may be conserved. The Hospital Corps should soon be recruited to 1,000. For a part of their period of enlistment, under the system of training inaugurated, this body of men is attached to our naval hospitals under the immedi-

ate and direct control of medical officers in charge of these establishments, who by custom and regulation are held responsible for their discipline. The Bureau is of the opinion that there should be no limitation to entire military control in the medical department not imposed by law or regulations on cognate subordinate naval commands. The medical officer in charge of the naval hospital should have authority over members of the Hospital Corps, under the authority of the commandant of the station, as now obtains for the commanding officer of the receiving ship or marine barracks with the enlisted personnel under their command.

It is necessary to the dignity and efficiency of the medical officer, alike as to the other naval officers in command of enlisted men, that with responsibility there should go due and unquestioned authority. Otherwise there is embarrassment, weakness of control, and lack of discipline. Since the members of the Hospital Corps are under the immediate direction and control of medical officers, it is for the best interests of the service that this control should in no instance be obscured or diminished by the phrase "in charge," which can be easily perverted or misunderstood. Medical officers of the Navy should have the same kind of status in connection with the Hospital Corps under them as obtains in the case of their brother officers in the Medical Corps of the Army. In the Medical Corps of the Army there is no question of the right to command the members of the Army Hospital Corps. The services of the medical officers of the Navy and of the Hospital Corps are available for the marine force in its various expeditionary detachments, and being in such military association they are thrown under the application of army regulations and discipline. In addition, the association for service of the marine force with the Army occurs, and is liable to recur, and it is not a satisfactory relation for the medical officer of the Navy, who is confronted with his different status as compared with that of the medical officer of the Army. Being engaged in identical duties in such contingencies there is no reason for difference in official status, and there should be an exact correspondence of authority as there is of obligation and duty.

INCREASE IN THE GRADE OF PHARMACIST.

The Bureau renews its recommendation that the number of officers in the only warrant grade of the Hospital Corps be increased to 50, and that the benefits of the laws relating to warrant officers of the Navy now existent and hereafter to be enacted be applicable to them. The need for pharmacists at the principal naval stations and at naval hospitals justifies the increase in numbers requested. Appointments to vacancies in this grade are made after a physical and professional examination to determine qualifications of such hospital stewards as possess records of long and faithful service, and the stimulus of this prospective promotion is a strong incentive to efficient service in the lower grades of the Hospital Corps. The present number of 25 pharmacists is not only inadequate for service needs, but is too small a per cent of the Hospital Corps, which should in the near future be increased to 1,000 men, to properly encourage the laudable ambition of the intelligent and trustworthy men to be found in the hospital stewards of the Navy.

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OPERATIVE SURGERY IN NAVAL HOSPITALS.

There has been an increase in the number of operations performed at the naval hospitals during the year ending June 30, 1904, the total being 753 as against 662 for the previous fiscal year. The hospital at New York furnished a total of 209 important operations performed, followed by Norfolk with 141 and Mare Island with 118, while Washington with 61 made an excellent proportional showing. The following is a summary of the character and number of operations performed, viz:

Abcess	70	Laparotomy	1
Adenectomy	131	Luxation (old)	3
Amputations	15	Necrosis (bone)	14
Prolapse of anus	5	Periostitis	2
Appendectomy	38	Phimosis	10
Aspirations	3	Plastic operations	12
Carbuncles	3	Pterygium	9
Castration	1	Resections	10
Cellulitis	1	Thoracocentesis	1
Circumcisions	87	Thoracotomy	1
Empyema	8	Tonsillotomy	30
Enucleation (eye)	1	Trephining (mastoid)	2
Excisions	1	Tumors and cysts	25
Fistula (fæcal)	2	Unguis involutus	3
Fistula in ano	19	Urethrotomy, external	7
Fracture (ununited)	19	Urethrotomy, internal	9
Hæmorrhoids	59	Varicocele	43
Hæmatoma	1	Varicose veins	10
Herniotomy (inguinal)	80	Gunshot wounds	2
Herniotomy (ventral)	2		
Hydrocele	7	Total	753

RECEIVING SHIPS.

Increased and better accommodations for recruits were provided by commissioning the more commodious *Hancock* as receiving ship in place of the *Columbia*, taken from the navy-yard, New York, for active service. The *Lancaster* was drawn from the cruising class and converted into a receiving ship, and has been utilized in connection with a camp and temporary barracks for recruits at the navy-yard, League Island, Pa. Inadequate provision for ventilation below the gun deck will materially decrease the number of men who can be safely billeted on the berth and orlop decks, and an efficient system of artificial ventilation should be installed before the capacity of this vessel is fully taxed. The *Franklin* and *Richmond* are used in connection with temporary barracks erected on St. Helena at the navy-yard, Norfolk, Va., and at the Puget Sound Navy-Yard the *Philadelphia* has replaced the old *Vipsic*. The *Wabash*, *Constellation*, *Santee*, *Independence*, and *Pensacola* are still in service, and have been kept in as good sanitary condition as is possible in view of their age, wooden structure, and long use as habitations for recruits. Used in connection with proper barrack buildings, these vessels will doubtless prove useful for years to come, but their capacity is too small for present requirements, and their sanitation grows increasingly more difficult.

During the year there has been less overcrowding of recruits on the receiving ships than in the previous year, and the resultant improvement in general health conditions has justified the Bureau in its rep-

resentations of the harmfulness and danger from undue crowding of the enlisted men and its recommendations to prevent the creation of insanitary conditions.

INFECTIOUS DISEASES AT RECEIVING AND TRAINING STATIONS.

The various and widely disseminated infections which threatened the service and were the occasion of much concern to the Bureau during the preceding year were largely suppressed and eradicated by the employment of vigorous and systematic preventive measures suggested in the review of such diseases contained in the last annual report. At the beginning of the present fiscal year there remained few cases of infectious disease—the smouldering embers of several epidemics which had occurred among the enlisted personnel. It was predicted, however, in view of the methods employed to secure men for the service, the activity of recruitment, together with the lack of preparedness to properly house them at the various naval stations, that there would be experienced a repetition of former troubles. The medical officers at the various naval stations have exercised unusual vigilance in their efforts to early detect evidence of any contagion and to promptly institute measures to prevent its spread. To these unflagging endeavors is due the comparative immunity from epidemic extension of infectious disease.

Facilities for the effective disinfection and sterilization of personal effects and bedding and for fumigation of living quarters have been provided by the Bureau at the receiving and training stations at Newport, R. I., at New York, N. Y., at Norfolk, Va., at Mare Island, Cal., and at the training station at San Francisco, Cal. Lack of a suitable building had prevented the Bureau from installing a proper sterilizing outfit at the navy-yards, League Island and Puget Sound, but this deficiency will be promptly supplied as soon as the building is provided for the outfit. With the installation and intelligent use of a sterilizing apparatus the danger of conveying infection to the vessels of the fleet through transfer of recruits will be much diminished.

Training station, Newport, R. I.—Throughout the year cases of diphtheria have recurred, but never as an extensive epidemic. The type of the disease has been mild, and no deaths have resulted from it. Measles, German measles, mumps, and scarlet fever have occurred among the apprentices in sporadic form. Seven hundred and ninety cases of infectious diseases were treated during the year. Pneumonia and diseases of the respiratory organs were very prevalent, and were traceable to insanitary appointments of the dormitories and to rigors of the climate at this station.

U. S. receiving ships Franklin and Richmond.—During the year ended June 30, 1904, these ships have been singularly free from infectious diseases with the exception of measles, which prevailed in epidemic form, 100 cases occurring during the early spring. Because of this epidemic, transfers of enlisted men to and from the station were suspended for several weeks. A few cases of mumps developed in recruits. The erection of temporary barracks on St. Helena prevented undue crowding on board, and the general condition of health on these vessels and at the navy-yard, Norfolk has been good.

U. S. receiving ship Lancaster.—The large majority of recruits attached to this vessel were domiciled in three temporary wooden bar-

racks erected on League Island. In view of last year's experience at this yard the Bureau was apprehensive of trouble, but health conditions were satisfactory, only a few sporadic cases of mumps and measles occurring prior to early spring. In the spring when transfers of recruits to the *Franklin* were suspended on account of the epidemic of measles prevailing at the navy-yard, Norfolk, Va., the number of recruits received at this station speedily increased.

On April 17 a case of cerebro-spinal meningitis was sent to the naval hospital from No. 3 barracks; on the 23d another; on the 25th two more, and on the 26th one. The Bureau at the first appearance of this disease recommended that the men be placed in tents, and this was effected as speedily as practicable. A board to investigate the sanitary condition of the yard was promptly appointed, and report was made showing that there had been overcrowding, and that from the most superficial inspection the barracks had been constructed without regard to sanitary requirements. It appeared that, although intended for the accommodation of about 750 men, these barracks could safely house no more than 250, and that overcrowding and lack of proper ventilation in the sleeping quarters had largely contributed to the outbreak. At this time cases of mumps and measles multiplied. The total number of cases of cerebro-spinal meningitis sent to hospital was 6, and of these 3 died. The prompt abandonment and thorough and repeated fumigation of the barracks checked the spread of this most distressing malady, and the lesson is again taught, at the expense of 3 lives lost and 3 more probably found disqualified for the service, that violation of the laws of hygiene brings its penalty.

U. S. receiving ship Hancock.—During the time this vessel has been used as a receiving ship cases of measles and mumps and a case of smallpox have appeared among the men, but in an interrupted way, and no epidemic has prevailed. Unusual vigilance has been exercised and repeated disinfection has been made to check infections, and the sanitary condition has been satisfactory. Early in June a single case of cerebro-spinal meningitis developed, but the disease did not spread.

United States naval training station, San Francisco, Cal.—The epidemic of diphtheria noted in last year's report was suppressed in the early autumn, only one case occurring in the fourth quarter of 1903, since which time there have been none. Measles and mumps have prevailed in mild epidemic form. Catarrhal diseases of the respiratory organs have been common, and pneumonia furnished 32 cases.

U. S. training ship Mohican and U. S. training ship Adams.—The *Mohican* reported cases of measles, rubella, and of mumps, the infection being received from drafts of apprentices from the training station at San Francisco, but the disease was speedily suppressed. On February 16, 1904, an epidemic of diphtheria started, and three cases were promptly recognized and sent to the marine hospital. Other cases following, the facilities of the quarantine station of the Public Health and Marine-Hospital Service, San Diego, Cal., were utilized, all the sick being transferred to hospital, and the ship's company, with bags and hammocks, established in barracks ashore. Here thorough disinfection was secured for all hands and the ship was fumigated with sulphur, and four days after was cleaned throughout. Daily inspection of all throats was made and diagnosis was confirmed by cultures. After eight days the crew returned to the ship. In all, eleven cases occurred. Antitoxin was used, and every case recovered.

U. S. receiving ship Independence.—The health conditions on this vessel have been satisfactory. Cases of mumps and measles have been reported, but no epidemic has occurred during the year.

Naval station, Puget Sound, Wash.—Cases of mumps and measles were reported at this station, but no epidemic developed. While mumps and measles and a few isolated cases of smallpox have occurred on several of the cruising ships, no general infection of any one of them has obtained.

BARRACKS FOR RECRUITS.

The question of properly housing the large number of recruits retained at receiving stations has been for some time of pressing importance. Congress has granted a large increase in the enlisted personnel and this increase is in advance of proper and satisfactory provision for the shelter and care of the men. In consequence raw recruits have been herded in unsuitable accommodations at the cost of much discomfort and hardship, under insanitary and unwholesome conditions. The receiving ships were inadequate in capacity and, under pressure of necessity, inadequate and ill-considered temporary barracks have been hurriedly constructed, notably at the navy-yards, League Island, Pa., and Norfolk, Va. Conditions favorable to the spread of various infections and to the occurrence of diseases of the respiratory organs, pneumonia, grippe, etc., have been created, and such diseases have been prevalent at the various recruiting and training stations.

It is believed that the added expense to the pension list by invalidism due to these conditions has not been insignificant. The construction of suitable, ample, and sanitary barracks has been already too long delayed, and the Bureau urgently recommends that emphasis be placed on the necessity for prompt relief to meet the difficulty of the present situation. Recourse to tents as a temporary expedient has been beneficial in certain emergencies, but it is undesirable, particularly in severe weather of our winters, to subject recruits to the inconveniences, hardships, and dangers of camp life. The erection of barracks, so long contemplated and repeatedly recommended by this Bureau and the Bureau of Navigation, would seem to be the best measure possible to solve the problem. It would be a grievous mistake, should barracks for recruits be built, to fail to have them planned in accordance with the most advanced sanitary ideas, insuring ample floor and cubic air space, abundance of sunlight, efficient ventilation, heating and lighting, with lavatory facilities, and plumbing and sewerage of the best type. The Bureau again recommends that each receiving station be provided with completely equipped barrack buildings of a sufficient capacity to shelter all recruits received at that station during a period of one month. This reception barrack would furnish a means of control over infections not otherwise practicable. It should be borne in mind that sanitary barracks, with every modern convenience, can promptly be made insanitary by overcrowding. The number of men housed in any barrack should not exceed a fixed maximum based on well-established laws of hygiene.

MARINE BARRACKS.

Reports from medical officers have given information of a degree of overcrowding under insanitary surroundings at some of the barracks

occupied by the marines. The growth of the Marine Corps has been rapid, and the capacity of barracks has been overtaxed. Some of the older buildings, notably those at the Washington Marine Barracks and at the Navy Yard, Washington, D. C., are inadequate, and were manifestly designed without regard to the hygenic needs of structures housing a large body of men. Concern has been felt at this state of affairs by medical officers charged with their sanitary supervision, and warnings and recommendations have been expressed, but the danger apprehended still threatens. Sanitary barracks are as necessary for the marines as for the enlisted men of the Navy and the Bureau recommends that the need of renovation and reconstruction of the insanitary barracks be given due consideration.

THE MARINE BRIGADE ON THE ISTHMUS OF PANAMA.

The secession of the State of Panama from the United States of Colombia and our treaty obligations to maintain free transit across the Isthmus, as well as the protection of the Panama Canal then in process of transfer to the United States, necessitated the assembling on the Isthmus of a force of United States marines, with medical officers and hospital corps men, aggregating 1,360 officers and men. The first battalion of 393 officers and men arrived at Colon on November 5, 1903. During the five months previous this force had been in camp on the island of Culebra, West Indies, and had there suffered more or less from malarial fevers, as high as 14 per cent having been on the sick list from this cause at one time. Arriving on the Isthmus on November 8, one company immediately encamped at Empire station, 35 miles from Colon, on the line of the Panama Railroad, and on the 15th the remainder of the force was sent to the same point. Another battalion of 324 officers and men arrived on the *Prairie* and encamped at Bas Obispo on December 28, 1903.

On December 18, 1903, the Bureau was informed that a medical outfit, complete in all particulars for a field force of 1,200 men, would be required, and immediately took steps to provide the necessary instruments and supplies, consisting of medicines, hospital stores, appliances, and filters. Tentage, cots, mosquito nettings, etc., were provided by the quartermaster of the United States Marine Corps in time to be forwarded with the expeditionary force sailing on December 28 from the navy-yard, League Island, Pa., on the U. S. S. *Dixie*. This force of 635 officers and men, under the personal command of Brigadier-General Elliott, Commandant, U. S. Marine Corps, included four medical officers and 14 hospital corps men. Arriving at Colon on January 3, 1904, this force was promptly encamped at Empire and Bas Obispo, which points were considered the best camp sites on the line of the railroad. More sanitary locations remote from the villages of infected natives were deemed impracticable because of the absence of roads, rendering access and supply most difficult. Reports of medical officers serving with this brigade, giving detailed sanitary information, will be found in that part of this report devoted to special reports. Mosquitoes of the *Culex* and *Anopheles* species, gnats, and other insects were plentiful at Colon, Panama, and the native villages, though at the camps they were not numerous enough to prove very annoying. Only by continued and frequent night inspections were the men trained to make a fairly effectual use of mosquito nets.

During the period covered by the various reports the percentage of sick was 4.05, of which malaria furnished 3.10. The daily average of patients was 55.70, of which malaria gave 41.40. Of 316 admissions to the sick list, 294 were for febris remittens, 17 for febris intermittens, and 5 for febris ephemera. The average number of days on the sick list was six. No death in the brigade occurred during the time covered by the reports, nor has one occurred subsequently. Blood examinations of the sick were made from the time of arrival, and after January 18, 1904, every case was so examined. In a series of 106 cases 5 cases failed to show the presence of the malarial plasmodium after several examinations, and 12, negative at first, were positive later. The parasite found was that of the tertian variety of malarial fever. In only 2 cases was a decided trace of albumen found. No case of yellow fever was noted. By April 18, the withdrawal of officers and men reduced the strength of the force to 450 officers and men, of whom 150 had had previous malarial attacks. There were indications that the force was becoming acclimatized. A blood examination preceded the administration of quinine in every febrile case. The medical officers accompanying the expedition worked with zeal and enthusiasm, and credit for the sanitary success of the expedition was due in large measure to their efficiency. General Elliott, U. S. Marine Corps, at all times showed a keen interest in sanitary matters, and this interest made it possible for the efforts of the medical officers to insure the physical welfare of the command to be crowned with gratifying success.

The battalion stationed on the Isthmus has suffered from a mild type of dengue, but has continued in good physical condition.

* * * * * * *

WOMEN NURSES.

The desirability of having trained women nurses as a part of the medical department of the United States Navy, eligible for service at naval hospitals, on board ambulance and hospital ships, and for such special duty as the Surgeon-General of the Navy may deem necessary, has been previously presented, and recommendation for their appointment has had the Department's approval. Mature consideration of the best interests of the naval service has convinced the Bureau that there is need for them.

The experience of the Army medical establishment has removed any doubt of their adaptability to service institutions under military control, and the superority of the woman over the man trained nurse for much of the duty required in the care of sick and injured men has been conclusively demonstrated. For reasons of discipline it is deemed best that there should be one superintendent of nurses, and, for reasons of economy, as many chief nurses, nurses, and reserve nurses as may be needed. Under conditions of peace the number of such trained nurses would be small and in time of war expansion to meet extraordinary needs without confusion and delay would be practicable. In addition to supplying better and more efficient nursing to the sick, valuable assistance could be rendered by the woman trained nurse in teaching the men of the Hospital Corps of the Navy their special duties, and in the event of war the men could be, in large part,

released from hospital duty and assigned to our vessels of war. The Bureau renews its recommendation that Congress be asked for legislation authorizing the employment of female nurses in the Navy.

DENTISTS FOR THE NAVY.

The recommendations made in two preceding reports for the enactment of legislation authorizing the employment, under the control of the Bureau of Medicine and Surgery, of skilled dentists for service in the Navy, is renewed. In the opinion of the Bureau the number to be allowed should be in the proportion of 1 dental surgeon for every 1,000 of the strength of the Navy and Marine Corps, not exceeding 30 in all, and authority for their appointment under the terms and conditions applicable to acting assistant surgeons in the Navy, after satisfactory examination to be prescribed by the Surgeon-General of the Navy, is desired. There are a few men in the rating of hospital steward with knowledge of dentistry and dental operations, and valuable service has been rendered by them on the receiving ships *Wabash*, *Hancock*, and *Franklin*, the training stations at Newport, R. I., and San Francisco, Cal., and also at the naval station, Island of Guam. The naval station at Cavite, P. I., has also been supplied in the same way. The dental operations performed by these men, so far as the Bureau furnishes supplies for them, are limited to simple procedures and urgent cases. This arrangement is a makeshift one, unsatisfactory to the Bureau, and can not be pleasing to the dental profession. It is hoped that Congress will act favorably on the plan proposed. The only dentist in the Navy, employed as such, is specially provided for service with midshipmen at the Naval Academy, and is not under the control of this Bureau.

MEDICAL OFFICER ON BOARD OF INSPECTION AND GENERAL BOARD.

The Bureau believes that only good will come from the presence of a medical officer as a member of these boards. The time has passed when the duties of a medical officer are circumscribed by professional care of the sick and injured. His highest function is as a sanitarian, and by training and experience he is qualified to give advice on questions of sanitation which have an important bearing on the living, combative element of the Navy and upon which efficiency and success are as much dependent as upon material strength. In the consideration of problems connected with the development of naval stations, sanitary inspections, quarters for the personnel, food supply best adapted to climate, effects of climate, clothing, location of hospitals and hospital facilities, water supply, recruiting, and other allied matters ashore and afloat, there is room for the sanitarian, and it is believed to be for the best interests of the service that an opportunity be given for the exercise of assistance which can be usefully extended by the officers of the Medical Corps. The Bureau renews its recommendation that a place be given on each of these boards to a representative of the medical department of the Navy.

UNITED STATES NAVAL MUSEUM OF HYGIENE.

A few unimportant additions were made to the collection during the last year. The bacteriological laboratory supplied culture media in dealing with epidemics, threatened or existing, at several stations. The distribution of microscopic outfits and appliances to ships and stations is intrusted to the museum, and considerable chemical and bacteriological work has been done in the laboratories, including examinations of urine, blood, sputum, gastric contents, tumors, etc., and sanitary water analyses. The buildings have been repaired and improved inside and outside, equipped with a complete electric-lighting system, and with apparatus for protection from fire. The improvements have adapted the building to use of the Naval Medical School. The grounds have been beautified and ornamented, particularly by an heroic bronze statue of Dr. Benjamin Rush, of Revolutionary fame, which was, with elaborate ceremonies, unveiled on July 11, 1904, as the gift of the American Medical Association to the United States. The work of erection of the new naval hospital on the grounds, in the rear of the buildings of the museum and medical school, is in progress.

MICROSCOPES.

The necessity of a microscope for clinical diagnosis and sanitary investigation and control has led the Bureau to adopt a liberal policy in responding to requests of medical officers for microscopes, and they are now issued as part of the medical outfit of a vessel or command. This has increased the accuracy of medical service performed and promotes the scientific and professional attainments of the officers of the Medical Corps. The adoption of standard microscopical outfits has been based on investigations made by the naval Museum of Hygiene and Medical School, and all issues of instruments are made from this institution.

MEETINGS OF MEDICAL ASSOCIATIONS.

The value to officers of the Medical Corps of keeping in touch with their professional colleagues in civil life, and thereby keeping pace with the progress and improvements in practice, from which naval life tends to separate them, is fully appreciated. For this reason the Bureau has been ready to take advantage of courteous invitations to have the medical department of the Navy take part in meetings of medical men during the year. Invitations have been received from the associations named, and delegates, whose names follow, have been sent, respectively:

American Public Health Association, Washington, D. C., October 26 to 30, 1903, Medical Director J. W. Ross and Medical Inspector W. R. Du Bose, U. S. Navy; the American Roentgen Ray Society, Philadelphia, Pa., December 9–10, 1903, Surg. C. F. Stokes, U. S. Navy; the Exposition of the Maryland Tuberculosis Commission, Baltimore, Md., January 25, 1904, Medical Director J. C. Wise, U. S. Navy; Southern Surgical and Gynecological Association, Birmingham, Ala., December 14–17, 1903, Medical Director R. C. Persons, U. S. Navy; National Association for the Study and Prevention of Tuberculosis, Atlantic City, N. J., June 6, 1904, Surg. H. G. Beyer, U. S. Navy;

American Medical Association, Atlantic City, N. J., June 7–10, 1904, Medical Director R. A. Marmion and Surg. C. F. Stokes, U. S. Navy; Association of Military Surgeons of the United States, St. Louis, Mo., October 10–15, 1904, convened as an International Congress of Military Surgeons, Medical Director J. C. Wise, U. S. Navy, president; Washington State Medical Association, Seattle, Wash., July 12–14, 1904, Surg. A. R. Alfred, U. S. Navy. An invitation to send a delegate to the International Congress of Otology, Bordeaux, France, August 1–14, 1904, could not be accepted on account of shortage of medical officers.

Surg. S. G. Evans, U. S. Navy, reported on the sessions of the Eleventh International Congress of Hygiene and Demography, Brussels, Belgium, from September 2 to 8, 1903, to which he was delegate, summarizing its conclusions in part as follows:

Prophylaxis of malaria:

1. Immunization by means of the constant use of quinine.
2. Disinfection of the blood of malarial patients by the use of quinine.
3. Mechanical protection of houses and of the exposed parts of the body.
4. Isolation of the sick.
5. Destruction of mosquitoes.
6. Sanitary work, drainage, etc.

The conference expressed absolute confidence in the value of antiplague serum. For a ship itself, quarantine was thought necessary only for the length of time required to destroy all rodents and insects, and the thorough disinfection of ship and cargo.

Medical Director J. C. Wise, U. S. Navy, delegate to the Exposition of the Tuberculosis Commission of Maryland, in his report, says:

> The general opinion prevailed that altitude has no part in the treatment of pulmonary tuberculosis other than when resorted to for change and tonic effect, and that an ideal plan would be to have sanatoria both in the mountains and at the sea level, patients to divide the time between the two as should seem advisable.

Medical Inspector Frank Anderson, U. S. Navy, made a valuable and exhaustive report on the proceedings of the Eleventh International Sanitary Conference, which met at Paris, France, October 10, 1903, and to which he was a delegate, representing the United States. The conference resolved itself into three committees, viz: First. Technical committee, or committee of revision. Second. Committee of execution, or of ways and means. Third. Committee of codification, or coordination of regulations. The most important conclusions of the conference were, viz:

> *Plague.*—Every man affected with plague can transmit the disease. The danger is greater or less according to the form of the infection. * * * As far as rats are concerned it is recognized that these rodents are propagators of plague, especially when the disease is spread by sea. * * * Several members were convinced that the opinion that plague passes from the rat to man by means of stinging insects such as fleas is not sufficiently well-established to justify a declaration to that effect. Five days should be adopted as the time of incubation of plague. * * * Drinking water plays no part whatever in spreading plague.
>
> *Cholera.*—* * * All the world agrees to-day as to the rôle of drinking water in the spread of cholera. * * *
>
> *Yellow fever.*—* * * The conference recommends to countries interested that they so modify their sanitary regulations as to put them in accord with our present knowledge of the mode of transmission of yellow fever, and especially the rôle of mosquitoes as vehicles of the germs of the disease.

After a discussion of various means of disinfection, the conference recognized that—

many experiments would be necessary before recommending any one method as altogether satisfactory; that the question will always remain open, as the processes of disinfection are always being improved, and that consequently it is better to leave each country free to choose for itself from among the processes recognized as giving good results.

The following resolutions were adopted by the conference, viz:

I. There shall be established an international office of health upon the principles adopted in the creation and administration of the International Bureau of Weights and Measures. This bureau shall have its seat in Paris.

II. The international office will have as its mission the collection of information upon the advance of infectious maladies. It will receive, to this end, the reports communicated to it by the superior health authorities of the participating states.

III. The office will announce periodically the results of its labors in the official reports which will be communicated to the contracting governments. These reports will be made public.

IV. The office will be maintained by contributions from the contracting governments.

V. The government within whose territory the international health office shall be established will, within the period of three months after signing the acts of conference, submit for the approbation of the contracting states a plan for establishing and operating this institution.

The estimated expense of establishing this institution would be about 100,000 francs annually. This would be apportioned among the different states according to their size and population, and upon this principle the share to be borne by the United States would be approximately 6,000 francs. The delegates of the United States not having been granted plenary authority, Medical Inspector Anderson made the following statement on behalf of the delegation, viz:

The delegation of the United States has the honor to declare that, while accepting the conclusions of the conference, it can not assume any obligation that will be binding upon the United States to act in accordance with these conclusions, but it will recommend to its Government the acceptance of the decisions of the conference. It feels compelled, however, to make the following reservation, viz: The sanitary authority of the United States can not accept the substitution of surveillance for observation, for the reason that the police system and the particular laws of the different States would render it impossible to carry out this measure. With this reservation, the delegation of the United States is willing to sign the convention.

PROVISION FOR CARE OF SICK WITH TUBERCULOSIS.

The concern of national, state, and municipal governments over the ravages of tuberculosis, and the interest of humanity in every measure taken to limit its spread, has been manifested by the organization of congresses, expositions, and associations for consideration of the subject. The Bureau is in sympathy with the movement because of its importance to the health and welfare of the personnel of the Navy, and, through medical officers sent as delegates to meetings in the United States, has kept in close touch with it. During the year the privilege of sending tuberculous patients to the army general hospital at Fort Bayard, N. Mex., has been availed of, but only for selected cases. The annoyance and difficulty of enforcing proper disciplinary control of naval patients under army regulations has led the medical officer in command to request transfer in a number of instances. The consensus of professional experience and opinion in regard to treatment of this disease is that the most hopeful method involves continuous open-air

exposure, most nutritious feeding, and other features of an hygienic regimen. The locality, or elevation of locality, is not of primary importance.

The Bureau recognizes a service obligation to the unfortunate victims of the malady, and is disposed, with the concurrence of the patient, to give him the best chance for recovery or improvement prior to discharge from the service. The necessity for protecting other patients in a general hospital from becoming infected by contact with tuberculous sick makes it most desirable that special provision for the separate care of this disease should be made at some place conveniently accessible for supplies and yet somewhat remote from populous localities. In default of any special sanitarium under the control of the Bureau, and to meet temporarily urgent needs, an experimental camp for tuberculous sick, consisting of 21 canvas tents, was established as an annex to the naval hospital at Pensacola, Fla., toward the end of the year 1903. The lack of many conveniences at this hospital, such as sewerage, abundant water supply, etc., has made the management of the camp difficult and inconvenient, but from results obtained in an experience of less than one year benefit from a sanitarium located at tide level can be hopefully expected.

Impressed with the conveniences to be had ready to hand at the idle naval station at Port Royal, S. C., and certain favorable climatic conditions prevailing there, the Bureau recommended the establishment of a camp for tuberculous cases at that locality. This, however, did not meet with approval by the Department.

The limit to expansion of the camp at the naval hospital at Pensacola, Fla., has been practically reached, and additional cases must be provided for elsewhere until facilities at that locality are greatly improved. The necessity for a well-established camp or sanitarium for the care of about 125 tuberculous patients and capable of expansion as need requires, exists, and the Bureau recommends that Congress be asked to make special provision for the acquisition of an appropriate site.

HOSPITAL SHIPS.

Maturer study and consideration of the subject of the need of hospital ships as an essential and integral part of the fleet has satisfied the Bureau of the wisdom of its recommendation that they be provided for by Congress. In a preceding report the Department was informed that the Bureau of Construction and Repair had laid down plans for a model hospital ship with a capacity of 300 patients, based on plans prepared by the Bureau, which, it was thought, would best meet service requirements. It is believed that such a vessel, primarily designed for a hospital ship, would prove far more efficient and satisfactory than one diverted from a commercial use and hastily converted, as was done in the case of the *Solace*, under exigency of war. In time of peace such a vessel would be most useful, acting with the large or combined squadrons in the extensive drills now prescribed, furnishing a conveniently accessible ambulant naval hospital.

In the decision to repair the ship *Relief* at Mare Island, Cal., for commission as a naval hospital ship, the need on the Pacific coast has been met for the time. The Bureau renews its recommendation that an appropriation for the construction of a suitable hospital ship for

the Atlantic side be requested of Congress. The medical officer of the U. S. S. *Vicksburg*, Passed Asst. Surg. Henry D. Wilson, U. S. Navy, gives striking testimony to the need of a fully equipped hospital ship after a naval engagement between modern ships, stating that he was sent to aid in the care of the wounded of the Russian ship *Variag*, after her engagement with the Japanese vessels off Chemulpo. In spite of the fact that the ships were from three to seven thousand yards apart and only the main batteries were employed, there were about 100 men disabled in a fight lasting not over twenty-five minutes. Though well fitted, as was supposed, with hospital facilities for ordinary emergencies, the medical and surgical equipment of the *Variag* was utterly inadequate to the necessities of the occasion. It would seem to have been sufficiently demonstrated that it is not practicable to carry a sufficient number of medical officers and attendants as part of a ship's complement to meet the situation resulting from a fight between modern ships. It is improbable that proper surgical aid to the wounded during an engagement can be given, and it should not be overlooked that the number of medical officers on any vessel is very limited and that they share in common with their combatant shipmates the chances and dangers of battle. In naval fights between single ships the absence of a hospital ship would be a misfortune, and when a number of ships are engaged its absence would be a calamity.

UNITED STATES NAVAL HOSPITAL SHIP RELIEF.

The overhauling and outfitting of this vessel at the Mare Island Navy-Yard, authorized by the Department, is nearly completed, and the ship will soon be in condition to be commissioned for service as a naval hospital ship. Accommodation is provided in well-appointed wards for 178 men, and, in separate spaces, for 10 warrant officers and for 5 junior commissioned officers. There are four principal wards, with proper ward dependencies, such as lavatories, baths, closets, linen and dressing rooms. Of these wards, one for convalescents is located on the forward part of the main deck, one for surgical cases in a space adjacent to the operating room in the after part of the main deck, one for strictly medical cases in the after part of the upper deck, and one, which is intended for infectious diseases, is located on the after part of the hurricane deck, and is fitted with an impervious floor and portable wire-screen walls, with a double-canvas awning for roof. This ward is effectively screened, is to be fly and mosquito proof, and is admirably suited for service under tropical conditions. A large ice and refrigerating plant, with abundant cold-storage rooms, a well-equipped laundry, and ample disinfecting chamber, for use of steam or formaldehyde, are supplied.

The ship is supplied with a complete and elaborate medical and surgical outfit, a well-appointed aseptic operating room with sterilizing apparatus in an adjacent apartment, and a fully equipped X-ray and photographic room. A well-appointed dental office, a microscopical and bacteriological laboratory, and an electrical room supplied with all modern electro-therapeutical appliances are to be found on the vessel. Two steam launches, specially designed for carrying stretcher cases, and a sufficient number of small boats with various appliances for transportation of the sick and wounded, form a part of the ship's

equipment. Two padded cells, for insane patients, and a mortuary room are provided. The ship has an ample supply of tanks for the storage of water, and arrangements for flushing are efficient. While lacking some of the features desired in a hospital ship, and which should be found on a vessel specially designed for such service, it is nevertheless believed that in the *Relief* the naval service will secure an efficient and fairly satisfactory hospital ship. A more detailed account of the various features of the *Relief* will be found in that portion of this volume set apart for special reports. The accommodations for the crew and officers of this ship are ample.

It is with regret that the Bureau learns that the shortage of officers of the line is deemed such as to cause an indefinite postponement of the time when the *Relief* will be commissioned for active service. Placed in ordinary, and idly resting at the wharf of a navy-yard, her expensive equipment will rust and deteriorate. The interests of the sick kept on board ship on account of the lack of any convenient hospital accommodation, as will be the case at Guantanamo, or overcrowded in an inadequate hospital (as was the case this year at Pensacola, Fla.), during the extended winter maneuvers in the Caribbean Sea or in the Gulf of Mexico, demand the facilities and services of the *Relief* as a part of the great fleet annually assembled. The Bureau earnestly recommends that the *Relief* be placed in commission in time to cooperate with the squadrons to be assembled in southern waters for fleet exercises in the coming winter.

THE EXHIBIT OF THE BUREAU OF MEDICINE AND SURGERY AT THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, 1904.

Under the direction of the Bureau of Medicine and Surgery an interesting and illustrative exhibit of articles used by the Medical Department of the United States Navy in the equipment of dispensary, sick bay, operating, and bath rooms of a vessel of war was prepared and installed in the bow of the improvised battle ship located in the naval section of the Government Building of the Exposition at St. Louis, Mo. The allotment of space was insufficient to allow an exhibition of a complete model or type of various subdivisions with appropriate fittings in situ, as was contemplated.

BOOK OF INSTRUCTIONS.

Under the supervision of the Bureau this long-contemplated and much-needed compilation has reached the stage of readiness for publication. As originally outlined it was proposed to incorporate therein a comprehensive collection of the laws and regulations based thereupon, instructions relating to the duties of the medical officer ashore and afloat, all necessary information pertaining to recruiting, requisitions, and supplies, and to forms, reports, and returns.

The need of such a vade mecum has long been felt, and would be particularly valuable to the younger members of the Medical Corps in simplifying methods of procedure and in securing uniformity of practice, without which confusion and inaccuracy inevitably result. The exigency of the service, and the latter-day method of recruiting by traveling parties, has compelled the placing of the most important

duty of physical examination of recruits in the hands of medical examiners lacking long experience and familiarity with service conditions; and lack of the guidance, which such a book of instructions would supply, has caused embarrassments and emphasized its need. Since the last issue of a book of instructions for medical officers more than two-thirds of the officers of the Medical Corps have entered the service, and the Bureau has had multiplied opportunities of seeing how necessary to the conduct of affairs under its supervision and how essential to the interests of the naval service is the re-issue of such a book. It was found inexpedient to attempt the publication of the comprehensive book of instructions originally designed, and by careful revision a manual of convenient size, similar to that made use of by the Army Medical Corps, has been practically completed and awaits the favorable consideration of the Department prior to its publication. This book of instructions will materially promote the efficiency of the Medical Corps, and, supplementing the regulations by its detailed information, will prove of great value in promoting the sanitary and medical interests of the naval service. The Bureau indulges the hope that there need be no further delay in placing this most helpful and necessary guide in the hands of every officer of the Medical Corps.

STATEMENT OF THE WORK DONE BY THE RECORD AND PENSION DIVISION OF THE BUREAU DURING THE FISCAL YEAR ENDING JUNE 30, 1904.

Pension cases remaining on hand June 30, 1903	77
Received during fiscal year ending June 30, 1904	2,572
Answered during fiscal year ending June 30, 1904	2,628
Remaining on hand June 30, 1904	21
Cases for board of medical examiners received and answered	373
Cases for retiring board received and answered	42
Reports of death received	286
Reports of medical survey received and acted upon	2,533
Cases from Civil Service Commission received and answered	67
Cases of physical rejection, transfer of patients, and miscellaneous letters received and answered	2,865

CONCLUSION.

In concluding this report attention is invited to the increase of work, incident to the growth of the Navy, performed by the clerical force of the Bureau. The number of clerks has not been correspondingly increased, and the business has been kept up to date with difficulty. Commendation is due the civilian force for its faithfulness and attention to duty. The work of assembling and distributing medical and surgical supplies from the naval laboratory at Brooklyn, N. Y., has largely increased, but the energy and efficiency of the management of this work has prevented delay in its prompt dispatch.

A comprehensive review of the work for the year shows a high state of efficiency in the medical establishment, and the Bureau notes with satisfaction the record made of service well done in conformity with the traditional high standard of the medical corps of the Navy.

Very respectfully,

P. M. RIXEY,
Surgeon-General, U. S. Navy.

The SECRETARY OF THE NAVY.

REPORT OF THE COMMANDANT OF THE UNITED STATES MARINE CORPS.

HEADQUARTERS U. S. MARINE CORPS,
Washington, D. C., September 1, 1904.

SIR: I have the honor to submit herewith a report of the condition and services of the United States Marine Corps during the past year:

Since assuming the duties of Commandant of the Marine Corps I have made a personal inspection of the marine barracks at the navy-yards, Portsmouth, N. H.; Boston, Mass.; Brooklyn, N. Y.; League Island, Pa.; Norfolk, Va.; Charleston, S. C., and Pensacola, Fla.; at the naval training station, Newport, R. I.; the naval station, New Orleans, La., and of the quartermaster's depot of supplies, Philadelphia, Pa.

* * * * * * *

SCHOOL OF APPLICATION.

Prior to my taking up the duties of Brigadier-General Commandant of the Marine Corps, the school of application, which had formerly held its sessions at the marine barracks, Washington, D. C., had been transferred to the marine barracks, United States Naval Academy, Annapolis, Md., for reasons which have heretofore been set forth. Second lieutenants who were appointed from civil life under the act of Congress approved March 3, 1903, were sent immediately to that school and were given a thorough practical and theoretical course of instruction, in order that they might be fitted for their duties as marine officers, both ashore and afloat. The course was mapped out to cover the period of one year, but in order to comply with the Department's direction of February 11, 1904, to send a battalion to the Philippines to consist of 600 enlisted men, it was necessary to graduate the class then in attendance at the school after it had been under instruction for a period of but six months. In spite of their comparatively short course these young officers manifested a marked superiority in their knowledge of their duties over those who have been longer in the service but had not been accorded the advantages of the school of application. There are now under instruction at this school 29 second lieutenants.

The course of instruction which was submitted from this office was approved by the Department and has been put into effect.

It is the intention of these headquarters to avoid detaching these officers from instruction at the school prior to their having completed their entire year of preparation unless the most pressing exigency shall demand such action.

The new regulations for the government of this school, submitted herefrom, and amended and approved by the Department, have also been put into operation.

In this age when such comprehensive detailed knowledge of so many subjects is required of officers in any branch of the naval or military service it is deemed essential that the appointees to the Marine Corps be given every facility to acquire a complete mastery of their profession; to this end it is hoped that the course at the school of application

may be so extended as to cover a period of two years, during which time, by dint of constant effort, it is anticipated that student officers will have an opportunity thoroughly to obtain the necessary instruction in the rudiments of their profession. The Brigadier-General Commandant proposes to send every officer in the Marine Corps below field rank through a course at the school when the conditions of the service shall admit of such action.

The school of application is now being conducted in the barrack provided for enlisted men. While this building is eminently fitted for the purpose for which it was designed, it is not suitable for use as a school for officers, and it is only by the employment of makeshifts that it is enabled to subserve its purpose. It is therefore strongly recommended that an appropriation of $50,000 be secured from the Congress of the United States for the construction of a proper building for occupancy by the school of application at Annapolis. This recommendation seems to be not ill-timed, having in view the fact that Congress has signified its interest in the subject by generous provision for the Army in this direction.

EXAMINATIONS FOR ENTRANCE INTO MARINE CORPS.

Since the passage of the act of Congress of March 3, 1903, providing for an increase of officers in the corps, in order that the commissioned personnel might be in proportion to the enlisted strength, examining boards have been convened from time to time at the marine barracks in this city for the purpose of determining the qualifications of candidates for appointment who have been designated by the Department. The young men who have been secured thus far have been of a desirable class, and appear to have within them the possibilities of developing into capable officers.

MILITARY TOURNAMENT, MADISON SQUARE GARDEN, NEW YORK.

A company of marines from the barracks at New York took part in the tournament of the Military Athletic League at Madison Square Garden, New York City, from May 2 to 7, 1904, and acquitted itself most creditably.

MARINE BATTALION, CAMP HEYWOOD, LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO.

Pursuant to the direction of the Department, in May of this year a battalion consisting of a field, staff, and color guard of 7, and two companies of 97 commissioned and enlisted each, being an aggregate of 201, under command of Maj. James E. Mahoney, U. S. Marine Corps, was sent to and encamped at the Louisiana Purchase Exposition, at St. Louis, Mo., for the purpose of properly guarding the United States naval exhibit there. The regular parades and drills of the battalion are a source of much interest to the visitors at the exposition, while the camp of the command is a model in all respects.

MARINE CORPS EXHIBIT, LOUISIANA PURCHASE EXPOSITION.

As a part of the United States naval exhibit at the Louisiana Purchase Exposition, the Marine Corps has displayed a complete assort-

ment of the articles of clothing, arms, and accouterments, and equipment issued by the Quartermaster's Department to the enlisted personnel.

MOUNTED PATROLS AT NAVY-YARD, MARE ISLAND, CAL.

In accordance with the recommendation of this office, as approved by the Department, the plan of providing mounted patrols has been put into effect at the navy-yard, Mare Island, Cal., in order more effectually to provide for the protection of Government property at that place. The quartermaster of the Marine Corps has been directed to purchase 8 public horses, together with the necessary saddlery and other equipment, for use at Mare Island, and it is anticipated that very appreciable results will be secured from the use of these mounted patrols.

WINTER MANEUVERS, 1903–4.

Owing to the size of the force of marines which was serving on the Isthmus of Panama during last winter, it was not found practicable to detail a battalion for duty in connection with the winter maneuvers of the combined squadrons in the West Indies. It is regretted that such action was not possible, inasmuch as it is conceived that both officers and men should have an opportunity to participate in this practical work, in view of the fact that they derive a very appreciable advantage therefrom.

EXTRA PAY FOR GUN POINTERS, MESSMEN, GOOD-CONDUCT MEDALS, ETC.

By the act of Congress approved April 27, 1904, all enlisted men of the Marine Corps regularly detailed as gun pointers, messmen, or signalmen, or holding good-conduct medals, pins, or bars, are authorized to receive the same extra compensation, in addition to their monthly pay, as is allowed to enlisted men of the Navy. This action of the legislative body has remedied an unforeseen though serious injustice which has hitherto operated against the enlisted men of the Marine Corps detailed for and performing the same duty as enlisted men of the Navy; while the latter were receiving extra pay for said duty their less fortunate comrades were serving without additional remuneration.

NEW POSTS OF THE MARINE CORPS.

The following new posts have been established in addition to the battalion encamped at St. Louis, Mo., hereinbefore mentioned, since the last report of the commandant of the corps was submitted, viz:

On April 18, 1904, a small guard detailed from the marine barracks, Sitka, Alaska, was established on Japonsky Island for the purpose of properly protecting the coaling station at that place; also the following, details regarding the establishing of which are hereinbefore set forth: Honolulu, Hawaii; Midway Islands, North Pacific Ocean; and Algiers, La.

In addition to the above-named posts, and in accordance with directions received from the Department, posts of the Marine Corps have been established at Guantanamo, Cuba, and Tutuila, Samoa, details concerning which are hereinafter mentioned.

TUTUILA, SAMOA.

On October 8, 1903, the Department approved a request for the establishing of a marine guard at the United States naval station, Tutuila, Samoa, and in accordance therewith a guard of 30 enlisted men, under command of First Lieut. Herbert J. Hirshinger, U. S. Marine Corps, was detailed for this duty. Owing to the many demands that were being made upon the Marine Corps at the time for the services of its officers and enlisted men, this detachment was not sent, but instead, pursuant to the request of the commandant, naval station, Tutuila, Gunnery Sergt. John F. Cox, U. S. Marine Corps, was dispatched to that station for duty in command of and as drill instructor for the Fita-Fitas, or native guard.

GUANTANAMO, CUBA.

On November 9, 1903, a battalion consisting of 11 officers and 301 enlisted men, under command of Maj. Lewis C. Lucas, U. S. Marine Corps, sailed from the navy-yard, League Island, Pa., on the U. S. S. *Prairie*, for the United States naval station, Guantanamo, Cuba, and went into camp at that place. The services of this battalion being required on the Isthmus of Panama, it was, on December 11, 1903, embarked on the *Prairie* and transferred to Bas Obispo, Republic of Panama, for duty at that place. On February 14, 1904, the situation, in the judgment of the Department, no longer requiring the services of so large a force on the Isthmus of Panama, this battalion was returned to Guantanamo and remained in camp there until May 11, 1904, when it was returned to the United States pursuant to the direction of the Department.

NEW OFFICES ESTABLISHED.

The following new offices of the Marine Corps have also been established:

On January 18, 1904, the assistant adjutant and inspector, United States Marine Corps, detailed for duty in the Far East, established his office at Manila, P. I.

On September 17, 1903, the assistant adjutant and inspector, United States Marine Corps, detailed for service on the West Coast, established his office at San Francisco, Cal.

On December 13, 1903, the assistant quartermaster, United States Marine Corps, ordered to duty on the West Coast, established his office at San Francisco, Cal.

On March 3, 1904, the assistant paymaster, United States Marine Corps, detailed for service with the First Brigade of Marines, established his office at Cavite, P. I.

EXPEDITION TO ABYSSINIA.

On November 6, 1903, a detachment consisting of 1 sergeant, 2 corporals, and 4 privates from the U. S. S. *San Francisco*, and 12 privates from the U. S. F. S. *Brooklyn*, was ordered to take passage in the U. S. S. *Machias* to Djibouti, French Somaliland, for service as escort to the diplomatic expedition to Abyssinia. The marine contingent was

commanded by Capt. George C. Thorpe, U. S. Marine Corps, who reported for this duty to Lieut. C. L. Hussey, U. S. Navy, commanding the entire expedition. During its two months' service in Abyssinia the command made more than forty camps and hoisted the United States flag in as many places, the detachment traveling by camel and mule caravan for 650 miles and performing its service in a most satisfactory manner. The commanding officer of the expedition reports that its performance of duty was efficient and that the impression it created was excellent.

PROVISIONAL BRIGADE OF MARINES, ISTHMUS OF PANAMA.

Pursuant to the orders of the Department, two battalions, consisting, all told, of 635 commissioned officers and enlisted men, were embarked in the U. S. S. *Dixie* on December 27, 1903, and sailed from the navy-yard, League Island, Pa., on the next day for Colon, Republic of Panama, arriving at that place after a quick and pleasant trip of six days. The *Dixie* was very commodious and 200 more men could readily have been berthed in her.

In accordance with the directions of the Navy Department, the Brigadier-General Commandant also took passage in the *Dixie* for the Isthmus of Panama, where, under the Department's instructions, he was to assume command of all marines on shore.

Upon arrival on the Isthmus it was found that the original *Dixie* battalion, under command of Maj. John A. Lejeune, U. S. Marine Corps, had gone into camp at Empire (Emperador), and that the battalion formerly attached to the U. S. S. *Prairie*, commanded by Maj. Lewis C. Lucas, U. S. Marine Corps, was stationed at Bas Obispo. Both battalions were in excellent health and were housed in small buildings, the property of the Panama Canal Company, which structures, previously to being occupied, had been thoroughly disinfected with a strong carbolic solution and were subsequently scrubbed out. All houses which were at any time occupied by United States marines on the Isthmus of Panama were similarly treated.

On January 7, 1904, all arrangements having previously been completed, one of the battalions which had shortly before arrived in the U. S. S. *Dixie*, commanded by Maj. Eli K. Cole, U. S. Marine Corps, was moved to Empire for station. Having in view the fact that Major Lejeune's battalion had already occupied a great many of the canal company's huts, it was impossible to quarter Major Cole's entire battalion in houses, consequently the overflow was put under canvas.

On January 8, 1904, the remaining battalion which had arrived in the *Dixie*, under command of Maj. James E. Mahoney, U. S. Marine Corps, was dispatched to Bas Obispo, where it was quartered with Major Lucas's battalion. The organization thereupon established was as follows:

The headquarters of the brigade, comprising the Brigadier-General Commandant, commanding; the adjutant-general, Capt. Henry Leonard, U. S. Marine Corps; the aid-de-camp, First Lieut. Frank E. Evans, U. S. Marine Corps; chief quartermaster, Maj. Cyrus S. Radford, assistant quartermaster, U. S. Marine Corps, and chief paymaster, Capt. William G. Powell, assistant paymaster, U. S. Marine Corps, were established at Haute Obispo.

The headquarters of the First Regiment, commanded by Lieut. Col. William P. Biddle, U. S. Marine Corps, with his staff, assumed station at Empire.

The headquarters of the Second Regiment, Lieut. Col. Littleton W. T. Waller, U. S. Marine Corps, commanding, with his staff, located at Bas Obispo.

Capt. Hugh L. Matthews, assistant quartermaster, U. S. Marine Corps, the chief commissary of the brigade, assumed charge of the quartermaster's and commissary depot which had been established at Colon.

Every effort was immediately brought to bear in the direction of securing proper sanitary conditions, and to this end large numbers of natives were employed, at very low rates, to cut undergrowth and clear away rubbish around the various camp sites. The effect of this action was very beneficial from a number of standpoints; it afforded employment for the indigent poor in the neighborhood, and obviated the necessity of working the enlisted personnel under a tropical sun at labor which must have been additional to their already sufficiently arduous duties, thereby insuring a decreased sick list.

The requirements of security and information were immediately given attention, and numerous scouting parties were sent out with the object in view of thoroughly covering the surrounding country and securing satisfactory topographical maps of the same. Not only were all of the trails in the vicinity thoroughly covered and mapped, but a large map of the Isthmus was prepared containing all these routes, together with the principal topographical features.

The brigade remained intact on the Isthmus of Panama until February 14, 1904, when a battalion under command of Maj. Lewis C. Lucas, U. S. Marine Corps, was withdrawn and ordered to proceed to Guantanamo, Cuba.

On February 16, 1904, the situation, in the judgment of the Department, no longer requiring the presence of the Brigadier-General Commandant on the Isthmus of Panama, that officer was detached, ordered to proceed to Washington, D. C., and to resume his duties at the headquarters of the Marine Corps.

During the service of the brigade in Panama, by dint of stringent measures in the direction of sanitary precautions, the health of the command was remarkably good. The compulsory employment of mosquito nets prevented, to a large extent, inoculation by mosquitoes. The proportionate number of cases of fever was remarkably small, having in view the records of previous commands in Panama, and the cases that did exist responded quickly to treatment. There were no deaths in the command. The fact that much of the fever was due to mosquito bites was reasonably clearly demonstrated as the result of an expedition to Real, a point situated near the head of the San Miguel Gulf, on the Pacific side, on which occasion it was impracticable to employ nets, and the proportionate amount of sickness in the command was correspondingly great.

The average illness, as shown by the report of the chief surgeon of the brigade, was 4.05 per cent. The attention of the Department is invited, in this connection, to the report of Surg. L. W. Spratling, U. S. Navy, chief surgeon of the brigade, of date March 1, 1904, now on file in the office of the Surgeon-General, United States Navy.

The work of the brigade having been thoroughly covered by reports submitted to the Department previously hereto, it is not deemed necessary to enter further upon the subject.

The force remaining in the Canal Zone consists of a battalion of 10 officers and 407 enlisted men, under command of Maj. John A. Lejeune, U. S. Marine Corps.

TARGET PRACTICE.

Great interest is being shown throughout the entire corps in the subject of small-arms target practice, but it is still impossible, owing to the lack of proper ranges, to bring the results of firing up to the desired standard. Every effort is being made to accomplish the best results with the limited opportunities at hand, but until proper ranges are established the returns must of necessity be unsatisfactory and frequently discouraging. It is earnestly hoped that Congress will give this matter serious consideration during its coming session, and that an appropriation for the purchase of land and construction of suitable ranges can be obtained. Until this is done very little progress can be made in this very important branch of the enlisted man's training.

During the month of June, 1904, exhaustive experiments were carried out to determine the effect of firing over water, and especially the effect of ricochets, with the present high-power small-arms ammunition. The results of these experiments show that firing with the 1898 and 1903 models from the 600, 730, 800, and 1,000 yard points, from elevations varying from 4 to 35 feet, and under different conditions of wind and sea, as the sea became smoother ricochets were lower and more uniform in direction. Generally speaking, the results of these experiments are approximately as follows:

Firing at 600 yards the percentage of ricochets showed 61, and the percentage of hits out of these ricochet shots was 39; at 730 yards the percentages were 100 and 61; at 800 yards, 82 and 29; at 1,000 yards, 64 and 26, showing that the average of ricochets is about 77 per cent and the hits 39 per cent of this number.

It was further demonstrated that up to the battle-sight range of 375 yards about 75 per cent of the shots did not ricochet, but were buried in the water.

The results of these experiments seem to demonstrate that in firing over water it is advisable to underestimate slightly the range rather than to overestimate it, this following as a natural result from the large percentage of ricochets which hit the target after striking the water.

RIFLE COMPETITIONS.

Similarly to last year a team from the Marine Corps was entered for the national rifle competition, which took place this year at Fort Riley, Kans., and for the "Dryden trophy," which took place at Seagirt, N. J. The details in connection therewith, showing the preliminary work and the results of the competitions, are contained in the report of the inspector of target practice on file in this office.

RECRUITING.

Recruiting for the Marine Corps is now conducted with excellent results through main offices and substations, located in the most populous districts between the Atlantic coast and the Mississippi River. At the present time the corps is but little short of the maximum strength allowed by law; with the increased number of recuiting offices, and through the interest being manifested by officers and noncommissioned officers on recruiting duty, the command will very shortly be recruited to its full strength.

The present style of poster in use is not satisfactory, being too small, and it is hoped that a generous appropriation can be obtained during the next session of Congress for the purpose of having a large and attractive poster lithographed. Designs for this are now under consideration.

The difficulty in obtaining medical officers of the Navy for duty at recruiting stations, and the consequent necessity of employing civilian surgeons for this work still obtains. It is hoped that this situation can be remedied, as the civilian doctors, being unfamiliar with the requirements of the service, frequently pass men whose physical condition is not up to the high standard which the Marine Corps is maintaining. Permanently injurious results from this source are materially lessened, however, by the system now in vogue of having all recruits examined by the naval surgeons immediately after their transfer to a marine barracks. Should this second examination not prove satisfactory the men thus found disqualified are at once discharged.

Height qualifications exacting a minimum, upon enlistment, of 5 feet 6 inches and a maximum of 6 feet 1 inch, are being rigidly maintained except in extraordinary cases of exceptionally desirable men whose heights are between 5 feet 5½ inches and 5 feet 6 inches.

The following recruiting offices of the Marine Corps are now open, viz:

District of Buffalo, N. Y.: Buffalo, N. Y.; Rochester, N. Y.; Syracuse, N. Y.

District of New York, N. Y.: No. 109 West street, New York City; 334 Third avenue, New York City; Newark, N. J.; Schenectady, N. Y.; Troy, N. Y.

District of Philadelphia, Pa.: Philadelphia, Pa.; Altoona, Pa.; Johnstown, Pa.; Reading, Pa.; Wilmington, Del.

District of Columbus, Ohio: Columbus, Ohio; Cincinnati, Ohio; Dayton, Ohio; Pittsburg, Pa.; Wheeling, W. Va.

District of Detroit, Mich.: Detroit, Mich.; Cleveland, Ohio; Toledo, Ohio; Grand Rapids, Mich.

District of Chicago, Ill.: Chicago, Ill.; Milwaukee, Wis.; Fort Wayne, Ind.

District of St. Louis, Mo.: St. Louis, Mo.; Kansas City, Mo.; Nashville, Tenn.; St. Joseph, Mo.

Also, Manchester, N. H.; Fall River, Mass.; Boston, Mass.; and Savannah, Ga.

MARINE BAND.

During the year just passed the Marine Band has been brought to an even higher state of efficiency than heretofore, largely through

the conscientious efforts and attention to duty of William H. Santelmann, the leader. The band, as during previous years, has furnished the music for all receptions and other occasions of ceremony at the White House, and in addition thereto gives weekly concerts during the summer months at the White House, Capitol grounds, and the marine barracks, respectively, in this city. These occasions are largely attended and afford much pleasure to classes of the population who would otherwise be unable to enjoy a good musical programme.

At this juncture it seems only proper that the Brigadier-General Commandant should invite the attention of the Department to the recommendation made by his predecessor, Maj. Gen. Commandant Charles Heywood, in his last annual report (1903), at page 33 thereof. General Heywood earnestly suggested that the following changes in the pay of the leader, second leader, and musicians of the band be made, and that they be paid as follows, viz:

To the leader, the pay and allowances of a captain in the Marine Corps; to the second leader, the pay and allowances of a second lieutenant in the Marine Corps; to first-class musicians, $100 per month; to second-class musicians, $75 per month.

These recommendations the undersigned has the honor most earnestly to second, inasmuch as it is not only desirable but necessary that the best talent in the country be secured in order to retain the present high standard of the band as an organization.

This band differs in its status from any other in the naval or military service of the Government. It is called upon to perform at the most important ceremonies connected with governmental functions, where its programme is subject to the criticism of the diplomatic and other representatives of the nations of the world. For this reason, if for no other, it is considered essential that the personnel of the organization should be such as would insure the best results from a musical standpoint.

Owing to disagreements with the various musical unions of the country it is extremely difficult to get first-class men to enlist for the pay now given musicians of the band, inasmuch as the best men are moved to decline to reenter the service upon the expiration of their terms of enlistment, having in view the fact that they anticipate that they will be enjoined from accepting outside engagements. It is only by taking up outside work that these musicians can make their emoluments correspond to the amount they would be able to earn in civil life. The consideration of the Department of this matter is earnestly requested.

STRENGTH OF THE CORPS.

During the year just passed no additions were made to the authorized strength of the Marine Corps, it being retained at a total of 278 officers and 7,532 enlisted men. In this connection the Brigadier-General Commandant desires to urge upon the Department the necessity of securing from the Congress of the United States an addition to the corps of 2,480 enlisted men, to be divided among the various grades as follows, viz:

Twenty first sergeants, 135 sergeants, 285 corporals, 20 drummers, 20 trumpeters, and 2,000 privates; total, 2,480.

The necessity for this action will be made readily apparent to the

Department when it considers that every post of the Marine Corps is now short of the strength required in order to perform properly the service desired, to the end that Government property contained in the various navy-yards and naval stations be adequately protected. These headquarters are in constant receipt of communications from the various commandants requesting increases in the strength of the respective barracks under their command.

Although appreciating the necessity for these increases, this office has been without power to grant them, having in view the fact that it could only alleviate the conditions at one post by increasing the risk of damage or loss at another. These headquarters are now required to retain the force of marines in the Philippine Islands at, approximately, 1,500 men. A battalion of 420 strong is serving on the Isthmus of Panama, and another battalion, I am informed, will be required for duty at the United States naval station, Guantanamo, Cuba, in the near future. Further than this, the various ships going into commission prior to January 1, 1905, will require a large number of men, and this office is, at present, considerably at a loss as to methods for meeting the many demands being made upon it for the services of officers and men. In addition to the foregoing the attention of the Department is invited to the fact that, pursuant to its directions, new posts have been established during the past year at the United States naval station, Algiers, La., the United States naval station, Honolulu, Hawaii, on the Midway Islands, and an order is now on file in this office, which has been only temporarily suspended, for the dispatch of a detachment for duty at the United States naval station, Tutuila, Samoa. With the force at its command it will be absolutely impossible for the Marine Corps to meet the various demands with which it is being confronted. It will be observed that in the foregoing no account has been taken of the numerous ships which will be commissioned within the few months next following January 1, 1905. These vessels will all carry large marine guards, it is anticipated, and the necessity for so supplying them is an additional factor to be considered when the matter of increase in the enlisted personnel is taken up.

The premises considered, it is earnestly recommended that the Department submit to the next Congress a request for an increase in the strength of the Marine Corps as hereinbefore outlined, it being further urged that the appropriation for 10 first sergeants, 62 sergeants, 144 corporals, 10 drummers, 10 trumpeters, and 1,000 privates of the foregoing be made immediately available.

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ARMY COURTESIES.

The military authorities have, as heretofore, courteously extended to the Marine Corps the use, whenever practicable, of space on United States army transports for transportation of personnel and material pertaining to the Corps.

SUPPLEMENTARY ESTIMATES.

As a result of recent inspections, and a thorough consideration of the subject, it has been found necessary to comprehend in the annual

estimates submitted from these headquaaters the following items for which appropriations are urgently needed:

For additional officers' quarters at the marine barracks, Naval Academy, Annapolis, Md	$35,000
For additional officers' quarters at the marine barracks, navy-yard, Portsmouth, N. H	8,000
For guard-room, prison, and amusement room at the marine barracks, Washington, D. C	35,000
For two sets of officers' quarters at marine barracks, navy-yard, Norfolk, Va.	20,000
For water-tower, water system, pump, and connection with regular water service at marine barracks, navy-yard, Norfolk, Va	30,000
For an addition of one story to each wing of the marine barracks, navy-yard, Puget Sound, Bremerton, Wash	8,000
For commanding officer's quarters at marine barracks, naval station, New Orleans, La	10,000

REGULAR APPROPRIATIONS.

The regular appropriations made for sustaining the Marine Corps have been expended to the greatest possible advantage, all purchases and expenditures being properly substantiated by vouchers.

Both the line of the corps and its staff departments are, in the judgment of the undersigned, in a high state of efficiency, such opinion being based upon a personal inspection of the various commands coupled with a careful observation of the practical operation of the various staff corps.

Very respectfully,

G. F. ELLIOTT,
Brigadier-General Commandant.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

REPORT

OF THE

SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., November 29, 1904.

SIR: I have the honor to submit herewith my sixth annual report of the operations of the Department of the Interior during the past year, and in so doing, to renew many of the suggestions and recommendations contained in prior annual reports, together with such others as in my judgment will best promote the public interest.

The volume of the public business requiring consideration has materially increased during the past year, but through the earnest and commendable interest in the service manifested by the officers and employees the work has been expeditiously dispatched. In some of the branches of the service, however, additions to the force will be necessary to the proper handling of the work, and the required accessions will be brought to the attention of Congress through the channels prescribed by law.

The Department has constantly endeavored to employ only men of ability and the highest degree of integrity. Its officials are sustained in the performance of their duties and protected against frivolous charges and fault-finding, but when found to be inefficient or untrustworthy they are promptly dispensed with. During the past year every effort has been made to improve the service in this respect, with the result that 23 Presidential appointees, who had been commissioned since March 4, 1897, have been eliminated from the Indian, Territorial, and Land service. Of these 9 resigned, 8 were removed, and 6 were superseded on the expiration of their terms. The above-mentioned rule is equally applicable to the clerical force of the Department and has been rigidly enforced in every instance.

In prior annual reports I have adverted to the fact that the compensation fixed by law for the services of the Assistant Secretary of the Interior and of the chiefs of division in the Secretary's Office were inadequate, and in again directing attention to the subject have to suggest the advisability of the early readjustment of these salaries by Congress on a more equitable basis

The past year has been one of much executive achievement in all branches of the service. The reclamation service, inaugurated under the act approved June 17, 1902, providing for the construction of irrigation works and for the reclamation of arid and semiarid lands in the Western States has been perfected, and, under surveys made by it, contracts have been let for effectuating the Salt River project, Arizona, the Uncompahgre Valley project, Colorado, the Minidoka project in Idaho, and the Truckee Carson project in Nevada, in all 21 contracts, covering an expenditure of, approximately, $3,270,787.23. Time being an element in the matter, the work on these projects will be prosecuted most expeditiously. There has also been tentatively allotted for surveys and construction work for this service in various States and Territories the sum of $23,699,642, and investigations as to projects in connection therewith are under way. This subject is more fully discussed on pages 87–97 of this report.

Nine additional forest reservations have been established by Presidential proclamations under the act of March 3, 1891 (26 Stat. L., 1095); one reservation has been abolished; four somewhat reduced in area; two have been enlarged, and two consolidated into one. The management of the forest reservations, in the main, has been satisfactory, but better administrative results could, doubtless, be secured if this service were transferred to the supervision of the Secretary of Agriculture.

The laws relating to the protection of the public domain and the timber thereon have been rigidly enforced, and a conspiracy entered into between certain persons in California and Arizona looking to the defrauding of the Government of a large acreage of public lands has been defeated and the leading spirits therein indicted. In addition 17 residents of Oregon have been indicted for conspiring to defraud the Government of public lands, forgery, and other criminal acts in connection with the acquirement of public lands; 5 of these have pleaded guilty, 1 has been convicted, and convictions will doubtless be obtained as a result of the trial of the other cases, which is now in progress.

The method adopted last year of soliciting bids for the sale of lands and the purchase of timber thereon instead of disposing of the same at public auction, was employed with creditable results in the matter of the sale of timber on the Chippewa ceded lands in Minnesota, as well as in disposing of part of the lands embraced in the Grand Ronde Indian Reservation in Oregon. Satisfactory sale was had of lands of the Red Lake Indian Reservation of Minnesota and the opening to settlement and entry of the Rosebud Indian lands in South Dakota, the Devils Lake lands in North Dakota, and Arid lands of Nebraska, was successfully effectuated.

In the Indian Service ten agencies were abolished during the years and the duties of such agencies devolved upon bonded superintendent, of Indian training schools. The policy of requiring able-bodied Indians to labor for their own support has been adhered to, and is proving more and more beneficial, both to the Indians and the service. A very material increase in the average daily attendance upon Indian schools was noted during the year. The wisdom of the recent change in the methods of leasing unallotted Indian lands is shown by the greatly increased revenue derived from this source. This is also true of the business of logging on Indian allotted lands, as under regulations now in force the logs are sold to the highest or best bidder, upon sealed bids, after due advertisement. Irrigation work on the various reservations has been constantly extended and is showing encouraging results.

Marked progress has been made in the enrollment of the members of the Five Civilized Tribes in the Indian Territory and the allotment to each member of his proportionate share in the communal property. A final adjudication has been made of the rights of more than 92 per cent of the whole number of applicants for enrollment to membership in the several tribes, and selections of allotments have been made by about 85 per cent of the number of allottees duly enrolled. The bulk of the work of enrollment of members and the allotment of lands, except as to contests and the determination of the rights of certain applicants now pending in the courts, it is believed will be completed on June 30, 1905, and that the survey of all the towns and the appraisement of lots therein will be substantially finished by July 1, 1905, as required by law.

I take pleasure in acknowledging the valuable aid cheerfully rendered in the conduct of the business of the Department by the Assistant Secretaries, the Assistant Attorney-General, the Heads of the various Bureaus, the Chief Clerk of the Department, and the Chiefs of the several Divisions of the Secretary's Office.

OFFICE OF THE ASSISTANT ATTORNEY-GENERAL.

The force of this Office is occupied in greater measure with the consideration of legal problems and claims arising under the laws of the United States relating to public lands and Indian affairs, and in lesser measure with the disposition of matters arising under the pension, patent, and other laws, the administration of which is committed to this Department.

Although the work has greatly increased during the past year, it is but slightly in arrears. A few cases are awaiting decisions of similar questions in suits pending in the courts.

The matters at this time awaiting consideration and action are: Five hundred and sixty-seven appeals from decisions of the Commissioner of the General Land Office; 51 motions for review of decisions heretofore rendered on such appeals; 25 references with request for law opinions to be given by the Assistant Attorney-General, and 46 miscellaneous matters.

The matters considered and disposed of during the last year are as follows: Seventeen hundred and seventy-six decisions receiving the approval and signature of the Secretary of the Interior in appeals from decisions of the Commissioner of the General Land Office; 339 decisions receiving the approval and signature of the Secretary of the Interior on motions for review; 598 decisions, regulations, orders, etc., receiving the approval and signature of the Secretary of the Interior in miscellaneous matters; 168 law opinions receiving the signature of the Assistant Attorney-General and the approval of the Secretary of the Interior.

The more important of the land decisions and opinions are, as a matter of ready reference, for use as precedents, published in book form in volumes known as the "Decisions of the Department of the Interior Relating to the Public Lands." Decisions of this character for the past year are to be found in volume 32 of said land decisions, already out, and in volume 33, now in course of preparation.

In addition to the work performed immediately in office, as above outlined, the Assistant Attorney-General and his assistants have also been occupied in presenting and arguing in the courts of the District of Columbia and the Supreme Court of the United States cases in which the Government, through the Interior Department, is interested. Several of such cases have been tried and decided during the past year, some of them of special interest not only because of the importance of the questions involved, but because they furnish a rule of action for numerous cases involving similar questions. Notably among these are United States ex rel. Carl Mallon *v.* Hitchcock; Joseph Naganab *v.* Hitchcock; Anna Bowes *v.* Hitchcock. In the above cases the contentions of the Department were sustained by the supreme court of the District of Columbia. In the Naganab case an appeal has been filed to the court of appeals of the District of Columbia, and in the Anna Bowes case notice of appeal has been given. An important case decided by the Supreme Court of the United States during the year was that of Morris et al. *v.* Hitchcock et al. (194 U. S., 384), which was appealed from the court of appeals of the District of Columbia, the Government's contention being sustained.

There are now pending before the Supreme Court of the United States the case of Humbird et al. *v.* Avery et al., The United States, intervener, which was argued some months ago, but a decision has not

been handed down, and two original cases—The State of Kansas *v.* The State of Colorado et al., The United States, intervener, and The State of Wisconsin *v.* Hitchcock. The management of all these cases has been placed under the Assistant Attorney-General by the Department of Justice and are progressing.

I can not commend too highly the able manner in which the affairs of this office have been administered.

LANDS.

The record of the land department for the past year is one of deeds accomplished. The ring of conspirators on the Pacific coast has been completely broken up, their predatory raids on the public domain stopped, the offenders indicted and apprehended, and brought before the courts for trial.

Other investigations of alleged violation of the public-land laws in that section and elsewhere are being rapidly and vigorously pushed, and it is believed that they will soon be in shape to present to the Federal grand juries having jurisdiction of the offenses alleged, and that the offenders will be speedily brought to justice.

Trespasses on the public timber have been of less magnitude, and unlawful inclosures of the public domain have decreased in acreage. The vigorous crusade against this class of offenders inaugurated by the Department seems to have developed such a wholesome regard for the law as bids fair in the future to make the protection of the public property less difficult.

The first sales of timber on the Chippewa ceded lands in Minnesota, held at Cass Lake, Minn., on December 5 and 28, 1903, under the system of sealed bids established by the act of June 27, 1902 (32 Stat. L., 400), known as the Morris Act, were the most successful sales of that character ever held, both as to the quantity of timber sold and the price received.

Equally successful was the sale under the act of February 20, 1904 (33 Stat. L., 46), of Red Lake lands at Thief River Falls and Crookston, Minn., the opening to settlement and entry of the Rosebud Indian lands in South Dakota, the Devils Lake lands in North Dakota, and the sale of the Grand Ronde Indian lands in Oregon.

The opening in Nebraska of arid lands, under the act of April 28, 1904 (33 Stat. L., 547), was attended, it is alleged, with scenes of turbulence, and certain irregularities in connection therewith have been charged, which are now under investigation by the Department.

Under the acts of March 3, 1901 (31 Stat. L., 1093–1094), and June 30, 1902 (32 Stat. L., 506), steps have been taken to secure the construction of practically all of the municipal improvements contemplated by said acts in the counties of Kiowa, Comanche, and Caddo, in the

cities of Hobart, Lawton, and Anadarko, Okla. Many of said improvements are now being constructed and in several cases are approaching completion.

Great progress has also been made in the administration of the act of June 17, 1902 (32 Stat. L., 388), known as the reclamation act. A number of projects have been started and satisfactory advancement made toward their completion. A more detailed statement of the work done along the lines here indicated will be found herein on pages 89–99. and in the appended reports of the Commissioner of the General Land Office and of the Director of the Geological Survey, respectively.

There were disposed of during the fiscal year ended June 30, 1904, public lands aggregating 16,405,821.95 acres, classified as follows: Cash sales, 2,307,344.73 acres; miscellaneous entries, embracing homesteads, land warrants, scrip locations, State selections, swamp lands, railroad and wagon-road selections, Indian allotments, etc., 13,951,548.21 acres, and Indian lands, 146,929.01 acres, showing a decrease of 6,418,477.70 acres as compared with the aggregate disposals for the preceding fiscal year.

The total cash receipts during the fiscal year from various sources, including disposal of public land, $8,795,893.73, and Indian land, $333,757.62; from depredations on public lands, $72,585.08; from sales of timber on forest reserves, $56,691.70; from sales of Government property, $738.85, and for furnishing copies of records and plats, $23,675; aggregate, $9,283,341.98, a decrease of $1,741,401.67 from the preceding fiscal year.

The total expenses of district land offices for salaries and commissions of registers and receivers, incidental expenses, and expenses of depositing public moneys during the fiscal year ended June 30, 1904, were $842,975.51, an increase, as compared with the fiscal year ended June 30, 1903, of $14,112.89.

The following table, compiled from reports received from the various local land offices, gives by States and Territories an approximate estimate of the reserved as well as the unappropriated public lands in the public-land States and Territories at the close of this fiscal year:

State or Territory.	Area unappropriated and unreserved.			Area reserved.	Area appropriated.
	Surveyed.	Unsurveyed.	Total.		
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Alabama	219,730	.....	219,730	51,480	32,386,710
Alaska	.....	[a] 368,035,975	368,035,975	67,705	.....
Arizona	12,064,793	34,936,800	47,001,593	20,249,180	5,541,547
Arkansas	2,427,857	.....	2,427,857	2,560	31,113,263
California	28,077,190	7,136,603	35,213,793	20,818,779	43,937,348
Colorado	31,733,053	4,098,543	35,831,596	5,294,348	25,222,216

[a] The unreserved lands in Alaska are mostly unsurveyed and unappropriated.

State or Territory.	Area unappropriated and unreserved.			Acres reserved.	Acres appropriated.
	Surveyed.	Unsurveyed.	Total.		
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Florida	997,777	160,070	1,157,847	19,259	33,895,534
Idaho	10,848,849	28,819,787	39,668,636	2,061,577	11,563,227
Illinois					35,842,560
Indiana					22,950,400
Indian Territory				19,714,560	
Iowa					35,646,080
Kansas	947,642		947,642	120,375	51,314,703
Louisiana	102,173	65,018	167,191	1,468,434	27,419,735
Michigan	340,507		340,507	120,654	36,358,039
Minnesota	2,243,210	884,198	3,127,408	2,346,820	45,723,852
Mississippi	92,420		92,420		29,592,700
Missouri	191,681		191,681		43,604,159
Montana	18,409,023	38,046,412	56,455,435	18,616,446	18,521,719
Nebraska	7,822,789	11,974	7,834,763	628,855	40,673,662
Nevada	30,833,050	30,417,530	61,250,580	5,983,409	3,102,651
New Mexico	38,123,606	14,128,734	52,252,340	7,356,104	18,820,356
North Dakota	7,795,095	3,302,356	11,097,451	2,686,690	31,125,939
Ohio					26,062,720
Oklahoma	2,095,427		2,095,427	3,055,469	19,567,824
Oregon	14,527,289	5,646,965	20,174,254	14,894,967	26,208,219
South Dakota	10,413,471	306,831	10,720,302	12,225,989	26,260,109
Utah	11,560,475	28,142,991	39,703,466	7,750,479	5,087,495
Washington	4,008,954	4,853,978	8,862,932	11,395,331	22,488,617
Wisconsin	71,373		71,373	432,524	34,770,983
Wyoming	34,320,326	2,609,852	36,930,178	15,511,085	9,992,017
* Grand total	270,267,760	571,604,617	841,872,377	172,873,079	794,794,384

PATENTS ISSUED.—There were 56,386 patents of all classes issued during the year. Of this number 52,102 are classed as agricultural, 1,247 are Indian allotments, 2,504 are mineral patents, 174 coal patents, 95 private land claims, 210 railroad, and 54 swamp-land patents. This is an increase of 4,448 over the agricultural patents issued during the preceding year.

SWAMP-LAND PATENTS, SCHOOL, AND OTHER STATE AND TERRITORIAL LANDS.—Swamp lands in place were patented to the amount of 259,207.23 acres, a decrease of 2,650,540.65 acres, which decrease is accounted for by the fact that during the preceding year one patent was issued covering 2,862,280 acres of lands situated in the Everglades and Mangrove Swamp in Florida. Cash indemnity for 1,540.96 acres of swamp lands was paid in the sum of $1,926.20, and land indemnity of 200 acres was certified. Indemnity, school, and other selections were made and certified during the year, under their several grants, to the various States and Territories to the amount of 487,064.51 acres.

RAILROAD AND WAGON-ROAD LAND PATENTS.—During the fiscal year there were certified or patented on account of railroad and wagon-road grants 4,551,071.66 acres, as against 5,816,957.04 acres last year, a decrease of 1,265,885.38 acres.

BOUNTY-LAND BUSINESS.—There has been located during the year, with bounty-land warrants, about 30,960 acres of public lands, distributed as follows:

Denomination of warrants.	40 acres.	80 acres.	120 acres.	160 acres.	Total.
Act of 1847	9			14	2,600
Act of 1850	45	20		7	4,520
Act of 1852	3	1		1	360
Act of 1855	1	41	36	99	23,480
Total	58	62	36	121	30,960

ADJUSTMENTS.—The report of the Commissioner of the General Land Office shows that material progress has been made in the examinations necessary to the adjustment of railroad and wagon road land grants, including the administration of the acts of July 1, 1898 (30 Stat. L., 597–620), March 2, 1899 (30 Stat. L., 994), and March 2, 1901 (31 Stat. L., 950), relating to grants to the Northern Pacific Railroad Company. A detailed statement of the progress made in the adjustment of the above grants will be found beginning at page 358 of the Commissioner's report.

Instructions were issued to the local land officers and a special agent of the General Land Office for the examination directed by the act of February 26, 1904 (33 Stat. L., 51), for "the relief of settlers on lands in Sherman County, in the State of Oregon," and representatives of this Department, detailed for that purpose, visited that section during the early fall for the purpose of conferring with the local officers at The Dalles and the special agent in the matter of the investigation and hearing being made and held under departmental instructions in said matter, to give such advice and directions and lend such cooperation and assistance as in their judgment the best interest of the Government might require. They were also directed to confer with the representatives of the Eastern Oregon Land Company, successor in interest to The Dalles Military Wagon Road Company, and to ascertain for what price and on what terms said Eastern Oregon Land Company will relinquish to the settlers the lands claimed by them, respectively, within the limits of its grant in Sherman County, Oregon, as referred to in said act, together with the improvements thereon.

The reports of said special agent and of said representatives of the Department are now before the Commissioner of the General Land Office, and a full and specific report in relation to said matter will be made to Congress on or before the first day of the next session as required by the last paragraph of said act of February 26, 1904.

STATE DESERT LAND SEGREGATIONS.—By section 4 of the act of August 18, 1894 (28 Stat. L., 372–422), as amended by the act of June

11, 1896 (29 Stat. L., 413–434), and act of March 3, 1901 (31 Stat. L., 1133–1188), provision is made for the donation to each of the desert-land States of not more than 1,000,000 acres of such lands. Under these acts lists were approved as follows:

State.	Number of lists.	Aggregate.
Idaho	2	24,241.22
Montana	1	3,675.22
Oregon	2	28,284.83
Wyoming	7	236,986.93

LEGISLATION IN REGARD TO ARID LANDS.—On April 28, 1904 (see 33 U. S. Stat. L., 547), the act known as the Kinkaid Act became a law. This legislation is experimental and is intended to solve the problem as to the disposition of lands not susceptible of irrigation. The law provides, in brief, that homestead entries in the State of Nebraska, west and north of certain designated lines, shall not exceed in area 640 acres, and must be in as nearly compact form as possible, and in no event exceed 2 miles in extreme length, and provision is made for additional entries of contiguous land by persons who own and occupy lands previously entered by them.

Said act became operative on the 28th of June, 1904, and instructions covering some 8,000,000 acres of lands affected thereby were duly issued by the General Land Office and approved by the Department, and in accordance with the provisions of said act such lands as were ascertained to be susceptible of irrigation were reserved and excluded from entry thereunder.

RECLAMATION OF ARID LANDS.—Under the national irrigation act of June 17, 1902, instructions were issued June 3, 1904, in regard to the Minidoka reclamation project in Idaho. This project comprises lands in 13 different townships, covering an estimated area of from 125,000 to 150,000 acres. The "farm units," or limits of area allowed per entry in said project, vary from 40 to 80 acres (except in fractional subdivisions, which are more or less), lands situated within a radius of one and a half miles from the center of a town site being divided into 40-acre units. The charge for lands in this project will probably be from $25 to $35 per acre.

Instructions are also in course of preparation for the Truckee-Carson project in the State of Nevada, embracing an area of 21,580 acres. There are 259 "farm units" embraced in this project, varying in size from 40 to 160 acres. The price of lands in this project has been fixed at $26 per acre, payable in ten annual installments.

From the date of the irrigation act of June 17, 1902, up to June 15, 1904, there have been 39,956,040 acres withdrawn for irrigation pur-

poses, of which 4,045,130 acres have been restored, leaving 35,910,910 acres remaining withdrawn. Further information on the subject of irrigation of said arid lands will be found on pages 89–99 of this report.

RESERVOIRS FOR THE PURPOSES OF STOCK BREEDING AND TRANSPORTATION.—Under the act of January 13, 1897 (29 Stat. L., 484), the number of declaratory statements on hand at the beginning of the fiscal year was 4,073. There were received during the year 858, making the total requiring action 4,931. Of this number 1,986 were canceled or relinquished, 419 were held at the end of the year for amendment or rejection, and 54 were approved, leaving 2,472 applications not acted upon.

RIGHTS OF WAY FOR RAILROADS.—Under the act of March 3, 1875 (18 Stat. L., 482), providing for rights of way over public lands, the act of May 14, 1898 (30 Stat. L., 409), providing for rights of way in Alaska, and various special acts, 664 companies have filed articles of incorporation which have been accepted, 34 of which were accepted during the fiscal year ended June 30, 1904. Right of way has been approved for 615 companies, 20 of which received their first approval during the same period. There were received during the year 509 maps of location of railroads, which, with those already pending, made a total of 628 maps on hand for action during the year. Of these, 172 have been approved; 30, not requiring approval, have been filed; and 397 have been otherwise disposed of, 21 having been rejected and the rest returned for correction, leaving 33 awaiting action June 30, 1904.

RIGHTS OF WAY FOR IRRIGATION AND OTHER PURPOSES.—Under the provisions of sections 18 to 21, inclusive, of the act of March 3, 1891 (26 Stat. L., 1095), as amended by section 2 of the act of May 11, 1898 (30 Stat. L., 404), the right of way has been approved to 579 companies, individuals, and associations of individuals, of which 138 received their first approval during the past year. There have been received during the year 464 maps, and 151 have been approved, 20 have been filed not requiring approval, and 288 have been rejected or returned for correction.

Under the act of February 15, 1901 (31 Stat. L., 790), authorizing the Secretary to permit the use of rights of way through public lands, reservations, or national parks for telegraph and telephone lines, electrical and water plants, canals, reservoirs, etc., for the storage and conveyance of water, and all beneficial uses, applications have been approved for 33 companies, individuals, and associations of individuals. Under the provisions of this act there were 28 maps pending in the General Land Office July 1, 1903, and 56 were received during the year, of which 33 were approved and 20 otherwise disposed of, most of them being returned for correction.

Under the provisions of the tram-road act of January 21, 1895 (28 Stat. L., 635), as amended by the act of May 11, 1898 (30 Stat. L., 404),

one map was received during the year, two were approved, and one was returned for correction, leaving none pending June 30, 1904.

In each annual report for several years I have called attention to the necessity for remedial legislation relating to the existing laws concerning right of way for the various purposes above referred to, and urged the passage of the bill transmitted to Congress by the Department April 4, 1902, with favorable recommendation. The following extract from my annual report for the fiscal year ending June 30, 1903, shows the position of the Department on this subject and the action taken upon the said bill:

> In my report of last year attention was called to the fact that the above-designated acts constituted a group of statutes, the administration of which has been the source of much embarrassment because of the unnecessarily large number of acts and the confusing amendments, while they do not, after all, cover the whole subject in a satisfactory manner, failing to provide for certain important uses of right of way, and being otherwise too limited in scope.
>
> Attention was also called to the necessity for legislation that would empower the Secretary of the Interior to declare a forfeiture of a lapsed right of way for railroads, canals, reservoirs, etc., over the public lands and reservations of the United States after notice to grantee.
>
> With the purpose in view of securing legislation along the lines indicated, the Department on April 4, 1902, transmitted to Congress such a bill as in its judgment would meet the requirements of the case, with the recommendation that it receive the approval of Congress and be introduced as a substitute for Senate bills 3374 and 3711, relating to the same subject.
>
> On June 4, 1902, the Committee on Claims submitted a report on Senate bill 3374, in which it was recommended that the title of the bill be amended by striking out the same and by inserting in lieu thereof the following: "A bill providing for rights of way in and through public lands, reservations, and certain national parks, and for other purposes," and it was further recommended that the bill be amended by striking out all after the enacting clause and inserting in lieu thereof practically the provisions of the bill transmitted to Congress by my letter of April 4, supra.

Uniformity in the laws relating to rights of way over the public domain and the avoidance of confusion in the administration thereof imperatively demand the passage of this bill or one similar thereto.

PUBLIC SURVEYS.—By the act of Congress approved March 3, 1903 (32 Stat. L., 1116), making appropriations for sundry civil expenses of the Government for the fiscal year ended June 30, 1904, and for other purposes, there was appropriated "For surveys and resurveys of public lands" the sum of $400,000, of which amount the Commissioner of the General Land Office was authorized to expend so much as he might deem necessary for examinations in the field, etc.

Out of said appropriation the sum of $80,000 was set apart to cover the cost of examinations in the field, the sum of $15,000 was reserved for emergencies, and the remainder, $305,000, was apportioned among the several surveying districts.

The apportionments made to the several districts were as follows:

Alaska	$50,000	Nevada	$10,000
Arizona	14,000	New Mexico	10,000
California	15,000	North Dakota	15,000
Colorado	6,000	Oregon	22,000
Idaho	32,000	Utah	16,000
Minnesota	10,000	Washington	32,000
Montana	43,000	Wyoming	30,000

Further apportionments were made from time to time to several surveying districts, and toward the end of the fiscal year contracts aggregating $60,000 were awarded from the uncontracted balance of the appropriation for resurveys in Routt and Rio Blanco counties in Colorado, authorized by the act approved April 28, 1904 (33 Stat. L., 519).

There were accepted during the fiscal year, after examination in the field, careful comparison of the surveying returns, and inspection of plats and field notes, surveys covering 7,394,850 acres, distributed as follows:

State or Territory.	Acres.	State or Territory.	Acres.
Alaska	1	North Dakota	529,805
Arizona	430,186	Oregon	359,809
California	211,524	South Dakota	1,159,134
Colorado	108,590	Utah	305,043
Idaho	505,166	Washington	332,454
Minnesota	274,683	Wyoming	429,141
Montana	2,330,007	Total	7,394,850
Nevada	68,159		
New Mexico	351,148		

ALASKAN SURVEYS.—By the act of March 3, 1899 (30 Stat. L., 1097), the rectangular system of surveys was extended to the district of Alaska; but no surveys under that system have as yet been executed there, nor has the proposed establishment of a principal meridian and several parallels referred to in my annual report of the last two years been executed, the first successful bidder having failed to enter the field, and the second, who is now under contract to do the work, not having had time enough to complete the same. Owing to the great difficulties to be overcome in the establishment of the regular base, standard, and meridian lines, the progress of the public surveys in Alaska will necessarily be slow until after those lines have been located and permanently marked.

Contracts were authorized during the year for the survey of all the claims of mission lands in Alaska, and some few of these contracts were perfected as required by the General Land Office. It is expected that this work will now proceed to completion by the close of another year.

At the date of my last annual report an examiner of surveys was engaged in making an examination of the conditions in Alaska respecting all classes of surveys, including surveys of mission lands. His report, which goes into the subject in considerable detail, will be found appended to the report of the Commissioner of the General Land Office.

RESURVEY OF SOUTH BOUNDARY OF COLORADO.—During the last fiscal year the General Land Office received the final returns of the resurvey of this boundary line.

The field work of the resurvey was thoroughly tested by an examiner and an engineer from that office. The monuments along the line were reported to be well within the requirements, and the work of the astronomer who conducted the instrumental work to have been performed with great care and accuracy. The resurvey was therefore accepted, and maps thereof were filed in the offices of the surveyors-general for Colorado and New Mexico.

The matter of adopting this line as the true boundary between Colorado, New Mexico, and Oklahoma, and the change in jurisdiction over adjoining lands, must be determined by negotiations between the United States and the State of Colorado, or otherwise, and I recommend that appropriate action be taken by Congress thereon and that provision be made at the same time for the closing of the lines of public survey to the new boundary line.

IDAHO–MONTANA BOUNDARY.—Congress at its last session authorized the survey and marking of the unsurveyed portion of the line between the States of Idaho and Montana, estimated at 450 miles, and appropriated $50,000 for this purpose. This line is the only interstate boundary line remaining unsurveyed and unmarked. It follows the top of the Bitter Root Mountain range southwardly to the Rocky Mountains, or Continental Divide, the crest of which it then follows to the east boundary of Idaho.

The problem of ascertaining the true watershed or crest of the two mountain ranges is an interesting one, requiring accurate judgment and experience in mountain topography and involving a multitude of reconnaissance surveys as the establishment progresses. This important work was begun by the contractor in the spring of 1904, and will probably require two seasons to complete.

FIELD EXAMINATIONS OF APPLICATIONS FOR SURVEY UNDER THE TIMBER AND STONE ACT.—Large areas of timbered lands, sought to be entered under the timber and stone act, having been surveyed upon affidavits of settlement and such settlement found to be fictitious, it was decided during the last year to use the corps of examiners of surveys to investigate in the field all applications for surveys that alleged settlement, and the result has proven the wisdom of this procedure.

In the timbered regions no real settlement to any extent was found,

and in most cases a mere camping hut without furniture and destitute of means of housekeeping was all that the examiners could discover on the ground. The alleged settlers, it was learned, lived in distant towns and cities and were induced, by promises of reward after the survey, to lend their names, evidently without an intention to make their homes on the land. The investigation has thus far resulted in materially checking the rapid absorption by unscrupulous persons of the valuable timber now standing on the public lands in the mountain districts.

EXAMINATION OF CEDED CHIPPEWA LANDS IN MINNESOTA.—The work of examining the lands in the former Chippewa Indian Reservations, ceded under the act of January 14, 1889 (25 Stat L., 642), was brought to a completion March 31 last. There were examined during the past year 725,818.98 acres, embracing lands in the Pigeon River, Fond du Lac, Bois Fort, Deer Creek, Red Lake, and Chippewa of the Mississippi reservations. Of the total lands examined 88,320 acres were classified as "pine" lands, and the estimates indicated that there are 172,445,000 feet of merchantable pine timber thereon.

SALES OF CHIPPEWA PINE TIMBER.—There were two sales of pine timber on ceded Chippewa lands held at Cass Lake, Minnesota, in December last, 415,000,000 feet of timber being sold for $2,650,903, or an average of $6.38 per thousand feet. Twenty per cent of the amount of the sales has already been paid.

Instructions and schedules have also been issued for the sale at Cass Lake, Minnesota, on November 15 next, of the pine timber on 116,190.26 acres of "pine" lands, estimated to contain 210,774,000 feet of timber, and for the sale at the same place on November 17, 1904, of 95 per cent of the pine timber on 16,833.96 acres, estimated to contain 12,967,000 feet of timber.

LOGGING OPERATIONS ON CEDED CHIPPEWA LANDS.—During the past logging season there were cut from ceded Chippewa lands 45,590,448 feet of timber, the price paid being $269,195.13, or an average of $5.90 per thousand feet. The expense to the Indians of logging said timber was $14,421.82, or a little over 5 per cent.

Logging operations have, except as to about 1,400,000 feet still standing, been completed on the "pine" lands on 15 of the school sections in the Red Lake and White Earth reservations, embracing 6,912.33 acres, the timber on which was sold at Crookston, Minn., on March 2, 1903. On these sections the scalers' reports show that there were 16,495,587 feet of timber cut. These sections, except as to one section examined in 1899, in which case the estimates and amount cut are about equal, were examined in the years 1893, 1894, and 1895, by Government estimators, who reported that there were only 10,151,000 feet thereon, or about 56 per cent of the amount of timber actually on the land.

Nine sections in the Chippewa of the Mississippi Reservations, involving 2,440.49 acres, the timber on which was sold at Cass Lake, Minnesota, on December 5 last, were cut clean the past season, there being 4,789,115 feet cut, as against 4,241,000 feet estimated to be thereon by Government estimators.

For the timber on the 24 sections cut clean, except as to 1,400,000 feet as above stated, all involving 9,352.82 acres, the price paid was $109,847.61, or an average of $11.74 per acre.

TIMBER CULTURE ENTRIES.—The time within which final proof could be made under the timber culture law expired March 3, 1904. The General Land Office has taken the necessary action to cancel such entries as still remain of record. During the past year 2,429 entries were canceled.

OPENING OF LANDS IN THE RED LAKE, GRANDE RONDE, ROSEBUD, AND DEVILS LAKE RESERVATIONS.—As provided by the act of February 20, 1904 (33 Stat. L., 46), the Red Lake Indian lands of Minnesota were offered at public sale at Thief River Falls, Minn., commencing at 9 o'clock a. m. June 20, 1904, and said sale was continued until July 14, 1904, at which time the same was adjourned to be resumed at Crookston, Minn., October 3, 1904.

There were sold 610 tracts, aggregating in area 93,747.59 acres, amounting to $589,117.20, or an average price of $6.28 per acre.

The amount received at this sale was $117,823.44, being 20 per cent of the total value of the land sold.

At the continuation of the public sale of Red Lake lands at Crookston, Minn., October 3 to 8, 1904, 1,035 tracts, containing 162,197.29 acres, were offered.

There were sold 129 tracts, containing 20,388 acres, for $90,559.65. The purchasers paid one-fifth of the purchase price, amounting to $18,111.93.

The highest bid received was $9.70 per acre, the lowest $4 per acre, and the average price was $4.44.

The total acreage in this reservation offered at public sale was 255,945.16 acres, of which amount 114,135.87 acres were sold for $679,676.85, one-fifth of the purchase price, viz, $135,935.37, being paid by the purchasers.

There remain unsold 141,809.29 acres.

Sealed bids for the sale of a part of the Grande Ronde Indian Reservation land in Oregon, as provided by the act of April 28, 1904 (33 Stat. L., 567), were received at Oregon City, Oregon, land office, from 9 o'clock a. m. on Monday, August 1, 1904, until 11 o'clock on Monday, August 8, 1904.

The total area of this reservation offered for sale was 26,021.64 acres, divided into 181 tracts of approximately 160 acres each.

Three hundred and thirty-three bids were received for 111 different tracts, aggregating an area of 16,418.48 acres, and ranging in price from $1.25 to $11.75 per acre, or an average price of $4.05 per acre, amounting to $66,497.21. Checks and money orders for $13,215.44 were received, representing practically 20 per cent of the amount bid, and the recommendation of the acceptance of these bids has been approved by the Secretary of the Interior.

There are 9,603.04 acres for which there were no bids. The act provides that no bids should be accepted until the sum of all bids received should equal or exceed $28,500, and as $66,497.21 was received for less than two-thirds of the lands offered for sale the sale is considered highly satisfactory.

The unallotted and unreserved lands of the Rosebud Indian Reservation, S. Dak., aggregating in area 385,817.11 acres, divided into 2,412 claims of approximately 160 acres each, subject to disposal under the provisions of the act of April 23, 1904 (33 Stat. L., 254), were opened to homestead entry by registered applicants only during the first sixty days, and thereafter by the first legal applicant at Bonesteel, S. Dak., August 8, 1904, in the order established by the drawing of July 28, 1904, and such opening continued for lands in that district until and including September 10, 1904, and thereafter at Chamberlain, S. Dak.

The law fixes the price for these lands at $4 per acre, to be paid in installments, and provides for reduction to $3 and $2.50 per acre after periods of three and six months respectively, after opening, and for disposal for cash, under rules and regulations and slightly different conditions, after expiration of four years after opening.

One hundred and six thousand three hundred and eight persons registered as applicants for said lands.

During the month of August, 1904, 938 homestead entries were made for these lands, aggregating an area of 147,838.68 acres, under which the first payment required under the act of April 23, 1904, supra, of $1 per acre was made, aggregating $147,838.68.

Thirteen applications under the President's proclamation of May 13, 1904, were received for the reservation from homestead entry for as many town sites in the ceded Rosebud Indian lands, South Dakota. After a careful investigation of the same and an examination of the tracts applied for in the field, the applications were, on July 28, 1904, submitted to the Secretary of the Interior, and the reservation of four town sites, covering 1,079.24 acres, was recommended, and on August 2, 1904, the recommendation was approved by the Acting Secretary of the Interior and the other applications were rejected.

The unallotted and unreserved lands in the Devils Lake Indian Reservation, aggregating in area 88,948.39 acres, divided into 556 claims of approximately 160 acres each, to be disposed of under the pro-

visions of the act of April 27, 1904 (33 Stats. L., 319), were opened to homestead entry by registered applicants only during the first sixty days, and thereafter by the first legal applicant, at the Devils Lake office, North Dakota, on Tuesday, September 6, 1904, at 9 o'clock a. m., and in the order established by the drawing of August 24, 1904, as prescribed by proclamation of June 2, 1904. Fifteen thousand and eighty-six persons registered as applicants for these lands.

These lands are to be paid for at the rate of $4.50 per acre as follows: $1.50 when the entry is made, and the remainder in annual installments of 50 cents per acre.

LAND CONTESTS.—There were 1,234 appealed and 4,786 unappealed contest cases decided during the year.

DEPREDATIONS UPON PUBLIC TIMBER.—There were 347 cases of depredations upon public timbered lands reported during the year, involving timber to the value of $337,515.43, a decrease of $284,583.68 from last year. In 48 cases recommendation was made for civil suit to recover damages. Propositions of settlement to the number of 68 were accepted, their amounts aggregating $53,398.40. From sales of timber cut unlawfully from public lands there were received $9,668.43; from compromises under section 3469, United States Revised Statutes, $25,733.90; from fines imposed and judgments rendered, $17,270.86; making a total of $106,071.59 accruing to the Government through depredations upon public lands.

On June 30, 1904, there were pending in the United States courts 125 civil suits for the recovery of a total amount of $2,009,863.30, the value of timber alleged to have been taken unlawfully from public lands, and 324 criminal prosecutions for cutting or removing timber in violation of law.

The decrease in the magnitude of trespass cases reported last year bears eloquent testimony to the efficient service rendered by the special agents of the General Land Office and the inspectors of this Department in suppressing this class of depredations on the public domain and in enforcing such a respect for the law protecting the public property as will tend in the future to still further decrease the number of violations in this respect.

PROTECTION OF PUBLIC LANDS.—An average of about 75 special agents of the General Land Office were employed during the year in investigating alleged fraudulent land entries, and otherwise in protecting the public lands from timber trespass or illegal appropriation. On July 1, 1903, there were pending 18,341 entries and filings awaiting reports from special agents or action upon reports already received or hearings had under such reports. During the last fiscal year there were received 10,224 entries and filings. Of the total number, 1,290 entries were held for cancellation or suspended on special agents' reports; 540 hearings were ordered on such reports; 1,231 entries

were canceled; 1,592 were approved for patent; and 7,285 entries were relieved from suspension, leaving 18,457 entries and filings pending July 1, 1904.

SOLDIERS' ADDITIONAL HOMESTEAD ENTRY FRAUDS.—All cases of assignment of soldiers' additional homestead rights are carefully examined in the General Land Office, and, if their validity remains open to doubt, are referred to special agents for investigation. Experience has demonstrated the necessity for a rigid inspection of these claims. During the past year 237 applications have been canceled, while 346 have been relieved from suspension.

UNLAWFUL FENCING OF PUBLIC LANDS.—With respect to unlawful inclosures, 137 reports of special agents were received during the year, showing an area of 1,353,567 acres of public lands unlawfully inclosed. Through the efforts of the special agents, 39 of such inclosures, embracing 717,505 acres of public land, have been removed and proceedings are pending to compel removal in the remaining cases reported. Specific instructions have been given the special agents to secure the removal of all the unlawful fences upon the public lands, and it appears from the report of the Commissioner of the General Land Office that material progress is being made in that direction, many of the fences being removed at once by the maintainers as soon as their attention is called by the special agent to the requirements of the law. In other cases, however, legal proceedings have been found necessary to impress upon the violators of the law the determination of the Department to keep the public lands open to the home builder.

THE PROSECUTION AND PRESENT CONDITION OF LAND FRAUD CASES ON THE PACIFIC COAST.—Charges were made and freely circulated by the opponents of the Administration to the effect that the investigation of the land frauds by the Interior Department is not being seriously and diligently conducted; that criminal prosecutions connected with the investigation are not being pressed with such vigor as to manifest a determination to bring the guilty parties to speedy justice, and that an air of secrecy pervades the Department, making it difficult to obtain information as to the progress and present status of the work.

These charges are utterly without foundation in fact. The investigation has been in the hands of competent officers of the Government from the beginning, and has been conducted, under the direction of the Secretary of the Interior, with the utmost possible speed consistent with thoroughness; the prosecutions, where indictments have been found, have been and are being vigorously pressed, and at no time has there been any attempt to deprive the public of the fullest information as to the progress or status of such prosecutions, or as to any matter in connection therewith.

The leading spirits in the fraudulent transactions brought to light

are mostly men who have occupied positions of influence and high standing, both socially and politically, and many of them are men of large wealth. They have thrown many obstacles in the way, which have required time, patience, constant effort, determination, and courage on the part of those having charge of the investigation to overcome.

They have diligently sought, in season and out of season, to thwart the purpose of the investigation and to control its results favorably to themselves. These difficulties have been successfully met and overcome and the tactics resorted to by the parties criminally involved and by their friends have been circumvented and defeated at all points. The determination of the Secretary of the Interior has been from the beginning that the investigation should be thorough and complete, and nothing has been left undone to accomplish such result. The fraudulent operations have been carried on chiefly in the States of California and Oregon, but have not been confined to those States. In many instances the conspirators have reached out into other States. Their schemes were broadly and deeply laid and the task of unearthing them has been one of great difficulty. While only about eighteen months have elapsed since the investigation was commenced, the practical results thus far attained are both gratifying and encouraging. They may be summed up as follows:

California.—1. The indictment in February, 1903, in the District of Columbia, of Frederick A. Hyde, John A. Benson, and Henry P. Dimond, of San Francisco, Cal., and Joost H. Schneider, of Tucson, Ariz., under section 5440 of the Revised Statutes, for conspiracy to defraud the United States of large quantities of its public lands, and the indictment in December, 1902, in the District of Columbia, of said John A. Benson for bribery of public officials in connection with such conspiracy. The leading spirits in this conspiracy are Frederick A. Hyde and John A. Benson, and their scheme to defraud the Government was of gigantic proportions. It involved an attempt to secure titles to hundreds of thousands of acres of the public lands of the United States, in the various public-lands States and in the Territories of Arizona and New Mexico, under the provisions of the act of Congress approved June 4, 1897 (30 Stat. L., 36), in exchange for State school lands lying within the limits of United States forest reserves established in the States of California and Oregon, the titles to which school lands were acquired by and on behalf of said Hyde and Benson, in violation of the laws of said States relating to the disposal of school lands, and in a grossly illegal and fraudulent manner, by means of false and forged applications, affidavits, and other documents required by the laws of said States to be executed and filed in connection with the purchase of school lands, thereby rendering such

titles false, fraudulent, and worthless, and by making and securing to be made false and forged relinquishments to the United States of such false, fraudulent, and worthless titles, and by selecting other lands belonging to the United States outside of forest reserves in exchange for the titles thus fraudulently obtained and relinquished to the United States.

The act referred to provides, among other things, that the *owner* of lands within a forest reserve may relinquish the same to the United States and select other lands in lieu thereof outside of forest reserves. Briefly stated, the object of the conspiracy was to obtain good titles from the United States for its public lands outside of forest reserves in exchange for false, fraudulent, and worthless titles to school lands secured by the conspirators from said States within forest reserves.

While hundreds of thousands of acres of the public lands were involved in the scheme, only a small portion thereof—less than 40,000 acres—had been patented at the time of the discovery of the fraud by the Secretary of the Interior. By the Secretary's direction the further issuing of patents upon the selections and entries involved was immediately stopped, and all such selections and entries were suspended, which suspension still remains in force. The Government is therefore in no danger of further loss of its public lands through the said scheme. The fraudulent business of the conspirators has been completely broken up, and their nefarious practices are now at an end.

The defendants in these indictments were immediately arrested, one —John A. Benson—in the State of New York, two—Frederick A. Hyde, and Henry P. Dimond—in the State of California, and the fourth—Joost H. Schneider—in the District of Columbia. The last named is now held under heavy bail for his appearance for trial. Proceedings under section 1014 of the Revised Statutes were at once instituted in the States of California and New York to secure the removal of the defendants arrested in those States to the District of Columbia for trial. These proceedings have been diligently prosecuted, and in California have resulted in decisions by both the United States district and circuit courts of the northern district of California sustaining the conspiracy indictment and ordering the defendants Hyde and Dimond removed to the District of Columbia for trial. They have appealed to the Supreme Court of the United States, and it is the purpose of the Government to secure in that court an advancement of the case on the docket, and a hearing of the appeals at the earliest possible date.

The defendants are under heavy bail to answer the decision of the Supreme Court when finally rendered. Upon the indictment for bribery, John A. Benson has also been held for removal to the District of Columbia for trial and he has appealed to the Supreme Court.

Upon the conspiracy indictment, removal proceedings are still pending against said Benson in New York, with the expectation that they will be concluded at an early date, with like favorable results.

The action of the Secretary of the Interior in suspending the selections and entries of the public lands involved in the conspiracy, and in refusing to issue further patents upon such selections and entries, is fully sustained by the decisions of both the district and circuit courts of the United States for the northern district of California, above referred to.

As an immediate and very important result of the investigation, this gigantic combination and conspiracy has been broken up, and its power for evil doing in the future utterly destroyed. . As further and ultimate results, the fraudulent selections will all be canceled and the lands covered thereby restored to the public domain, and it is the confident belief of the Secretary of the Interior and of the officials having charge of the prosecutions growing out of the investigation that the guilty parties will be convicted, and such punishment meted out to them as will not only be commensurate to the magnitude of their crimes, but will serve as a warning to evil doers in the future.

It should be further stated in this connection that as to the indictments found in the District of Columbia against Frederick A. Hyde, John A. Benson, and others, more rapid progress in the matter of bringing the defendants to trial has been impossible by reason of the great delay caused by proceedings required to be had by section 1014 of the Revised Statutes to secure the removal of the defendants to the District of Columbia for trial. These defendants have been and are stubbornly resisting removal, and have been and are endeavoring by every possible means to secure delay in the removal proceedings. While the indictments against them were found nearly a year ago, they have thus far been able to prevent a trial by resorting to the apparently fruitful sources of delay under the law as it now exists. It is quite probable that the time from the date of the finding of the indictments until the presence of the defendants in the District of Columbia for trial, can be secured, will cover a period of a year and a half or more. Such long delay is not only embarrassing to this Department, but there is danger that by the death of important witnesses the final success of the prosecutions may be seriously jeopardized. These things strongly suggest that a change in the law whereby the removal of indicted parties to the jurisdiction where the indictment is found may be more speedily secured, to the end that their trial may be had within a reasonable time, would be wise. The Department in this instance has been much embarrassed by the delays referred to, which have been apparently within the law as it now exists.

INDICTMENTS IN THE STATE OF OREGON.—(2) (*a*) The indictment, October 27, 1903, of Horace G. McKinley, Stephen A. D. Puter, and Marie L. Ware, under section 5440 of the Revised Statutes, for conspiracy to defraud the United States of its public lands.

(*b*) The indictment, October 29, 1903, of Horace G. McKinley, Stephen A. D. Puter, Marie L. Ware, and Emma L. Watson, under section 5440 of the Revised Statutes, for conspiracy to defraud the United States of its public lands.

(*c*) The indictment, October 30, 1903, of Horace G. McKinley, under section 5418 of the Revised Statutes, for forgery and other criminal acts condemned by the statute, in connection with acquiring title to public lands of the United States.

(*d*) The indictment, October 30, 1903, of Stephen A. D. Puter and Guy Huff, under section 5418 of the Revised Statutes, for forgery and other criminal acts condemned by the statute, in connection with acquiring title to public lands of the United States.

(*e*) The indictment, March 17, 1904, of Emma L. Watson, Stephen A. D. Puter, Marie L. Ware, Horace G. McKinley, Maude Witt, Frank H. Walgamot, Harry C. Barr, Dan W. Tarpley, and others, under section 5440 of the Revised Statutes, for conspiracy to defraud the United States of its public lands.

(*f*) The indictment, March 26, 1904, of Charles Cunningham, Asa Rayburn, Dallas O'Harra, Glen H. Saling, Shelley Jones, Mark Shackleford, and Kate James, under section 5440 of the Revised Statutes, for conspiracy to defraud the United States of its public lands.

(*g*) The indictment, April 2, 1904, of Henry Meldrum, former surveyor-general of the State of Oregon, under section 5418 of the Revised Statutes, for criminal conduct condemned by that statute.

In these prosecutions Charles Cunningham, Asa Rayburn, Dallas O'Harra, Glen H. Saling, and Shelley Jones have pleaded guilty, and sentence has been imposed upon all except O'Harra and Jones. The other cases were set for trial at the May term, 1904, of the Federal court at Portland, Oreg., but owing to the fact that one of the principal witnesses for the Government had absconded the cases had to be continued, and are now set for trial at the November term, 1904, of the court. The absconding witness has been arrested and is now under bail for his appearance at the November term. An able attorney, skilled in the conduct of criminal prosecutions, has been appointed by the Government to assist the United States attorney in the trial of these cases, and convictions in all of them are confidently expected.

The investigation is still being carried on and further indictments are expected as soon as the cases can be prepared for proper presentation to grand juries. In so far as indictments have not as yet been found it should be apparent to every one that secrecy must necessarily be maintained, otherwise all efforts to accomplish beneficial results

would be futile. There is not now, and never has been, any desire or effort on the part of the Secretary of the Interior or those engaged under his direction to keep from the public the results of the investigation except in so far as absolutely necessary to prevent a failure in the endeavor to acccomplish the desired end, to wit, the conviction and punishment of the guilty parties.

That the charges of this Department's want of sincerity and diligence referred to are in every respect without justification in fact or reason can easily be ascertained by anyone who cares to know the truth. The results accomplished are largely shown by the public records of the courts and of the Land Department, and in so far as not thus shown, namely, as to the absolute destruction of the Hyde-Benson combination and the general breaking-up of the fraudulent practices in other sections, as herein indicated, the honest seeker for information can have no difficulty in obtaining it by simple inquiry of the officials of the Land Department or of the indicted parties themselves.

The following telegram received at the Department speaks for itself:

PORTLAND, OREGON, *September 29.*

Judge Bellinger to-day overruled the demurrer to the indictment in the case of the United States *v.* Emma L. Watson, S. A. D. Puter, Horace G. McKinley, Miss Marie L. Ware, Maud Witt, Frank H. Walgamot, Henry C. Barr, D. W. Tarpley, and three others, whose names are unknown, accused of fraud in Government land transactions.

These indictments caused a sensation when they were returned, many of those implicated being prominent.

On November 18 the Department was advised of the conviction of Henry Meldrum, former surveyor-general of Oregon, in the Federal court at Portland, on the indictment found against him April 2, 1904, as hereinabove set forth.

FOREST RESERVES.

There are now 59 forest reserves, created by Presidential proclamations under section 24 of the act of March 3, 1891 (26 Stat. L., 1095), embracing 62,763,494 acres. This is an increase over last year of 408,529 acres.

Nine additional forest reserves have been established; 1, the Crow Creek Forest Reserve in Wyoming, has been abolished; 4 have been somewhat reduced in area, and 2 have been enlarged; while 2—the Santa Ynez Forest Reserve and the Pine Mountain and Zaca Lake Forest Reserve, in the State of California—have been consolidated into one, under the name of the Santa Barbara Forest Reserve. In the latter case an additional area, consisting of private lands lying between the two reserves, was also included.

FOREST-RESERVE FIRES.—During the last fiscal year there were extinguished 231 fires that had passed the incipient stage when discovered. The areas burned over aggregated 112,817 acres, and the cost of extinguishing the fires, excluding salaries of forest employees, was $4,127. This is a decrease from the preceding year of 48 fires, of 166,917 acres in area, and of $2,036 in cost. The larger area for the preceding year is partly accounted for by the fact that during that year an extensive fire in the Mount Rainier Forest Reserve burned over an area of 129,018 acres.

SHEEP GRAZING IN FOREST RESERVES.—For the grazing season of 1901 the Department authorized the grazing of 1,400,000 head of sheep in all or parts of 8 reserves; 391 permits were issued, covering 1,214,418 head. For the season of 1902 these same reserves were opened to 1,197,000 head, and 484 permits were issued, covering 1,151,513 head, and in 1903 they were opened to 877,000 head, when 320 permits, covering 812,328 head, were issued. In addition to these 8 reserves, parts of newly created reserves were, for the season of 1903, opened to the grazing of 601,400 head of sheep, and 113 permits were issued, covering 600,239 head. For the grazing season of 1904, 20 reserves were opened to the grazing of 1,811,750 sheep, and 843 permits were issued for the grazing of 1,806,722 head.

CATTLE AND HORSE GRAZING IN FOREST RESERVES.—For the grazing season of 1901 there were 1,926 permits issued to graze 277,621 head of horses and cattle in 32 reserves; for 1902 there were 2,642 permits issued to graze 357,552 head in 37 reserves; for 1903 there were 4,121 permits to graze 529,973 head in 44 reserves, and for 1904 there were 5,822 permits to graze 610,091 head in 48 reserves.

SALES OF TIMBER IN FOREST RESERVES.—There were pending at the beginning of the year 118 petitions for sale of timber in forest reserves, and 370 were presented during the year. Of these 377 have been granted and sales effected, 20 were refused or abandoned by the applicants, and 91 were pending at the end of the year. The sums realized from this source during the year and paid into the Treasury amounted to $58,436.19.

FREE USE OF TIMBER IN FOREST RESERVES.—The applications received during the year for free use of timber in forest reserves numbered 3,265, an increase of 1,041 over the number received during the preceding year. The amount of timber embraced in these applications was 5,764,683 board feet and 53,569 cords, of which more than half was dead timber, the removal of which has been of especial benefit to the reserves.

SAWMILLS IN FOREST RESERVES.—The policy of issuing permits for the placing of sawmills within the reserves, under such restrictions as appear to be demanded by the conditions in each case, has been continued with good results, not a single case having resulted unfor-

tunately. Among the advantages accruing from the practice of allowing the location of such mills near the cutting area in timber-sale cases may be mentioned the fact that it has tended to promote a more economical use of timber, has furnished better facilities for supplying the products to the consumer, and has brought about a more satisfactory understanding among all concerned. It has also resulted in more careful methods in the management and control of fires, and has furnished a corps of trained assistants in cases where fires have attained proportions beyond the control of the forest officers.

MISCELLANEOUS PRIVILEGES IN FOREST RESERVES.—Under this head are included the construction of wagon roads, establishing and conducting of road houses, public stopping places, hotels, stores, and the privilege of hay cutting, etc. Such applications were received to the number of 226, exceeding the number of the preceding year by about one-third. About one-half of these applications have been allowed, while the remainder have been rejected or are held for further action.

FOREST RESERVE LIEU SELECTIONS.—Of forest reserve lieu selections there were pending July 1, 1903, 5,504 cases, involving an approximate area of 1,263,236.93 acres. There were received during the last fiscal year 3,256 cases, involving an approximate area of 466,623 acres. Of this number 2,910 cases were approved for patent and 134 were rejected, making 3,044 finally disposed of, and embracing an area of 601,833 acres. There were pending June 30, 1904, 5,616 cases, involving an approximate area of 1,128,027 acres.

LANDS RELEASED FROM TEMPORARY WITHDRAWAL.—The delay in determining what further reserves will be ultimately proclaimed has necessitated holding extensive areas temporarily withdrawn, in order to prevent speculative appropriation of the lands in advance of the creation of the reserves. As rapidly as the reserves are finally established these withdrawals are revoked as regards all lands not included therein. From June 30, 1903, to October 1, 1904, 3,632,500 acres were restored to the public domain and thrown open to settlement and entry. By virtue of the authority vested in the Land Department, and in accordance with an opinion of the Assistant Attorney-General for the Interior Department, all lands of this character are now thrown open to settlement as soon as restored to the public domain, but are not open to entry or selection until after notice to that effect has been published for sixty days.

ENTRY OF AGRICULTURAL LANDS WITHIN FOREST RESERVES.—In the preliminary report by the commission on the public lands attention was drawn to the importance of having all the land within the borders of forest reserves put to the best use, in consequence of which it was recommended that such lands be opened to agricultural entry, under suitable restrictions and limitations prescribed by law.

A bill (H. R. 13631), prepared in accordance with this recommendation, was introduced in Congress on March 8 last, but failed of action. In view of the importance of this measure, its enactment into law is greatly to be desired, and I accordingly urgently recommend the passage of the bill.

AUTHORITY TO MAKE ARRESTS.—It is a matter for serious regret that as yet no legislation has been secured as the result of the bills heretofore recommended by this Department and successively introduced in the Fifty-Sixth, Fifty-Seventh, and Fifty-Eighth Congresses to confer authority upon forest officers to make arrests for violation of the laws and regulations relating to forest reserves. The management of the reserves is so hampered by the want of such authority that I desire to lay special stress upon the need for this legislation, and urgently recommend that the bill for this purpose which was introduced in the House at the last session of Congress (H. R. 7296), and received favorable action by that body, be passed by the Senate at the next session of Congress.

TRANSFER OF THE ADMINISTRATION OF THE FOREST RESERVES TO THE DEPARTMENT OF AGRICULTURE.—The Commissioner of the General Land Office renews the recommendation heretofore made by his Office that the work connected with the administration of forest reserves be transferred to the Bureau of Forestry in the Department of Agriculture.

In my last annual report I used this language:

> Forestry, dealing as it does with a source of wealth produced by the soil, is properly an agricultural subject. The presence of properly trained foresters in the Agricultural Department, as well as the nature of the subject itself, makes the ultimate transfer, if found to be practicable, of the administration of the forest reserves to that Department essential to the best interests both of the reserves and of the people who use them.

I am still of the opinion therein expressed, and concur, therefore, in the Commissioner's recommendation.

SUMMARY OF LEGISLATION RECOMMENDED.—The Commissioner of the General Land Office, for reasons stated in his report, recommends the passage of bills pending before Congress as follows:

A bill to provide for the entry of agricultural lands within forest reserves. H. R. 13631.

A bill to control grazing in forest reserves. H. R. 6480.

A bill for the protection of the public forest reserves and national parks of the United States. H. R. 7296.

A bill to regulate the use of forest-reserve timber. H. R. 13095.

A bill to provide for the sale of the timber and other material growing or being on public forest reserves and for renting or leasing of the lands therein. H. R. 7295.

A bill for the protection of wild animals, birds, and fish in the forest reserves of the United States. H. R. 8135.

A bill to set apart certain lands in the Territory of Arizona as a public park, to be known as "The Petrified Forest National Park." H. R. 2529.

A bill to set apart certain lands in the Territory of New Mexico as a public park, to be known as "The Pajarito Cliff Dwellers' National Park," for the purpose of preserving the prehistoric caves and ruins and other works and relics therein. H. R. 7269.

A bill creating the Colorado Cliff Dwellers' National Park. (The Commissioner recommends change of name to the "Mesa Verde National Park.") H. R. 6784.

A bill to establish and administer national parks. H. R. 13478.

(See the above bill as amended and set forth on page 391 of the Commissioner's report.)

The Commissioner also recommends legislation providing for the determination of questions arising from the resurvey of the south boundary of the State of Colorado, and for the transfer of the administration of the forest reserves to the Department of Agriculture.

I concur in the recommendations of the Commissioner for legislation as above indicated.

PUBLIC LANDS COMMISSION.—The report of the Public Lands Commission, is attached to and made a part of the report of the Commissioner of the General Land Office; the modifications of existing executive methods and the legislation recommended therein meet my approval, the same being practically what has been recommended in prior annual reports regarding the repeal of the timber and stone act, the amendment of the desert land law, and the commutation clause of the homestead law as well as the enactment of legislation for the sale of timber on public lands.

INDIAN AFFAIRS.

Marked advances toward civilization have been made by the Indians of the United States during the past year, and the number of those who have engaged in earning self-support has materially increased, many wholly supporting themselves and families.

The Indian population has varied but slightly from previous years, the number being about the same as reported last year—272,000. Of this number, about 180,000 occupy 156 reservations in the various States and Territories, containing about 55,127,000 acres, outside of the State of New York and the Indian Territory.

The Five Civilized Tribes, composed of the Cherokee, Chickasaw, Choctaw, Creeks, and Seminole, in the Indian Territory, number about 86,650, including freedmen, their reservations aggregating 19,475,614 acres. The New York Indians occupy 8 small reservations in the northwestern part of the State of New York, having an area of about 88,000 acres. They number about 5,200, and receive small annuities in money and goods under treaty stipulations.

Ten additional agencies have been abolished during the year, under the authority of law, and the duties pertaining thereto devolved upon

bonded superintendents of Indian training schools located at such agencies, so that but 23 agencies are provided for in the appropriation act for the current fiscal year, as against 33 for the past year and 43 for the previous year. As intimated in my last annual report, the policy of placing Indian affairs and reservations under the charge of the school superintendents thereon seems to meet the changing conditions of the Indians in their efforts at self-support and independence. As in recent years so during the past year Indians whose allotments have been leased for their benefit have been required to work portions of such allotments, unless because of disability they were unable to do so.

Allotments have been made during the year to 484 Indians and approved, the total area allotted amounting to 39,085 acres. Allotments in severalty approximating 8,862,000 acres to 73,524 Indians have been made since the passage of the general allotment act of February 28, 1887 (24 Stat., 388). And 796 patents for allotments have been issued and delivered during the year.

The policy of requiring able-bodied Indians to labor for their own support, and withholding rations from all except the needy and indigent, was put into practical operation in the early part of the year 1902.

Agents were then notified that the support in idleness of those able to work must cease; that work would be offered the able-bodied, for which they would be fairly and promptly paid, and they would then be left to provide for themselves, as no further rations would be issued to them. The money saved by the reduction of rations would be used to pay them in cash for labor in building roads, dams, reservoirs for storage of water, and other needed work on reservations which they were competent to perform, which would give them profitable occupation for the present, and by the experience thus gained lead to their self-support in the future. Men were to be paid $1.25 per day of eight hours, and men with teams $2.50 per day.

Agents were directed not only to employ the Indians to the fullest possible extent on the reservations, but to use all their influence to find employment for them in the surrounding country. The object was to provide an opportunity for the Indians to work. If the Government did not have sufficient work, the agent was to find it for them. The Indians were given to understand that they were free to work or not as they chose, but if they were able to work and were given a chance to do so, and then refused, they must suffer the consequences, and need not expect the Government to support them.

As a first result of the practical working of this policy, the Commissioner of Indian Affairs, in his annual report for the year 1902, stated that over 12,000 Indians had been dropped from the ration rolls as being wholly self-supporting, many of whom had never worked before.

This of course included a large number of Indians employed by and drawing salaries from the Government in the agency and school service.

The effects of this new policy on the Indian population have proven to be greatly beneficial from the outset. Of course, there are still many lazy, shiftless Indians who will not work until compelled by want to do so, but reports from Indian agents, school superintendents, and inspecting officers indicate beyond question that the majority of the able-bodied on most of the reservations are not only willing but eager to work.

Another important result has been a very material reduction in the quantity of subsistence supplies, such as beef, flour, bacon, sugar, etc., required to be purchased each year by the Government.

As bearing upon the question of the desire of many Indians to work and depend upon their own exertions for support, mention may be made of the annual migration of hundreds of Indians—men, women, and children—to the hop and sugar-beet fields in Oregon and Washington during the harvest season, where they work picking hops and gathering the beet crop for the white farmers, while others work at the sawmills and canneries. Many of the Indians of the San Carlos, Fort Apache, and Mescalero reservations seek and find employment on railroad work in the vicinity of the reservations. During the fiscal year 1903 over 300 Navaho Indians were employed off the reservation, principally with the Santa Fé Pacific Railroad Company, and earned an average wage of $1.10 per day. The agent reported in 1902 that the earnings of the Navajos on railroad work outside the reservation amounted to $70,135. They are good workers and are sought by the sugar-beet farmers in Colorado, where many of them have been (with the approval of the Department) profitably employed.

During the calendar year 1903, the sum of $194,000 was authorized by the Department to be expended by the agents and superintendents in charge of the Sioux reservations alone, in employing Indians in lieu of rations.

This policy has passed beyond the experimental stage. The Indians are beginning to understand that the idle and shiftless must suffer; that the Government will employ, or find employment for, all who will work, and that only the sick and physically disabled will be fed and cared for without work.

FINANCIAL.

Appropriations.—The amount appropriated by the Indian appropriation act for the fiscal year ending June 30, 1905, is $9,853,480.75. For the fiscal year ended June 30, 1904, the sum of $8,521,306.77 was appropriated, as given in the previous report.

The appropriations for the fiscal years 1904 and 1905 for the different objects for the Indian Service are shown in the following table:

	1904.	1905.
Current and contingent expenses	$727,940.00	$727,400.00
Fulfilling treaty stipulations	2,181,633.35	3,514,285.85
Miscellaneous supports, gratuities	649,000.00	570,000.00
Incidental expenses	93,400.00	76,900.00
Support of schools	3,522,950.00	3,880,740.00
Miscellaneous	1,346,383.42	1,084,154.90
Total	8,521,306.77	9,853,480.75

By the deficiency and other acts for the years 1904 and 1905 the following additional amounts were appropriated:

	1904.	1905.
Current and contingent expenses	$36,000.00	
Miscellaneous	45,000.00	$25,000.00
Total	81,000.00	25,000.00

making total appropriations for the years 1904 and 1905 as follows:

	1904.	1905.
Current and contingent expenses	$763,940.00	$727,400.00
Fulfilling treaty stipulations	2,181,633.35	3,514,285.85
Miscellaneous supports, gratuities	649,000.00	570,000.00
Incidental expenses	93,400.00	76,900.00
Support of schools	3,522,950.00	3,880,740.00
Miscellaneous	1,391,383.42	1,109,154.90
Total	8,602,306.77	9,878,480.75

The increase in the appropriations for 1905 over those for 1904 is $1,276,173.98, and is explained as follows:

Increase over 1904:		
Fulfilling treaty stipulations	$1,332,652.50	
Support of schools	357,790.00	
		$1,690,442.50
Decrease from 1904:		
Current and contingent expenses	36,540.00	
Miscellaneous support, gratuities	79,000.00	
Incidental expenses	16,500.00	
Miscellaneous	282,228.52	
		414,268.52
		1,276,173.98

The great increase in the appropriations for 1905 arises from the fact that several large appropriations were made pursuant to agree-

ments ratified during the second session of the Fifty Eighth Congress, amounting to $1,332,652.50, explained as follows:

Turtle Mountain band of Chippewas	$1,003,000.00
Sioux of Rosebud Reservation	75,000.00
Crows	131,200.00
Flatheads	175,000.00
Indians of Devils Lake	52,000.00
Total	1,436,200.00

Less the following treaty items reduced or dropped out, viz:

Surveying and allotting for Chippewas in Minnesota, reimbursable	$90,000.00
Kansas Indians	6,750.00
Kickapoos	388.51
Pottawatomies	1,008.99
Pawnees, employees	5,400.00
Total	103,547.50

leaving an increase in treaty appropriations for 1905 of $1,332,652.50, as stated above.

EXPENDITURES.—The expenditures on account of the Indian Service for the fiscal year 1904 from moneys appropriated, from trust funds, and from miscellaneous sources, in all aggregating $10,438,350.09, were as follows:

Current and contingent expenses	$703,660.00
Fulfilling treaty stipulations	1,690,969.87
Miscellaneous support, gratuities	530,301.32
Trust fund	2,033,955.53
Incidental expenses	74,902.64
Support of schools	3,401,746.82
Miscellaneous	2,002,813.91
Total	10,438,350.09

INCOME.—The following was the income of the various Indian tribes from all sources during the fiscal year 1904:

Interest on trust funds	$1,777,373.41
Treaty and agreement obligations	2,065,845.52
Gratuities	649,000.00
Indian moneys, proceeds of labor, and miscellaneous	1,626,458.07

making a total of $6,118,677.00 as against $6,142,015.35 for the fiscal year 1903, a decrease of $23,338.35.

EDUCATION.

Indian schools to the number of 253 were in operation during the fiscal year 1904, as against 257 in 1903. Of these, 25 were nonreservation boarding schools (one less than last year, on account of consolidation of Riverside and Perris schools); 90 reservation boarding

schools (one less than last year, Grace school, on Crow Creek Reservation, S. Dak., being abandoned, and Otoe school, Oklahoma, destroyed by fire, and Jicarilla school, on the Jicarilla Apache Reservation, N. Mex., was established), and 138 day schools (two less than last year), with a total enrollment in all Government schools of 25,248 pupils, and an average attendance of 20,404, against a total enrollment of 24,357 pupils and an average attendance of 20,876 in 1903, or an increased average attendance in 1904, of 528 pupils.

In addition to those in Government schools there was an average attendance of 3,700 in mission boarding and day schools, the Normal and Agricultural Institute at Hampton, Va., and in public schools, against an average attendance of 3,506 in 1903, an increase of 194.

IMPROVEMENT TO SCHOOL PLANTS.—The appropriation for the construction, purchase, lease, and repairs of school buildings for sewerage, water supply, and lighting plants, etc., made under the general school appropriation for the fiscal year 1904, was $250,000, nearly half of which was used for repair work, and from the balance several new plants were erected. In addition to this appropriation, Congress provided for the use of the 25 nonreservation schools $374,170 for the erection of new buildings, water, sewer, and lighting systems, purchase of land, etc., and $99,200 for repairs and minor improvements.

Congress also granted authority to expend not exceeding $30,000 out of the trust fund in the United States Treasury to the credit of the Otoe and Missouria Indians, for the purpose of erecting a school plant on their reservation to replace the one destroyed by fire, and the buildings will be completed in time for the opening of the school this fall.

LEASES OF ALLOTTED LANDS.

Since the date of the last annual report 4,457 leases for farming, grazing, and business purposes have been approved.

In addition there were approved 6 leases for the mining of gypsum and 2 for the production of oil and gas on allotted lands.

The mining leases were made under an amendment to the leasing rules, dated October 13, 1903, which provides that "no applications for mining leases will be considered by the Department unless specific permission has first been granted by the Department for negotiating for the same with the individual Indians whose lands are sought to be leased."

LEASING OF INDIAN UNALLOTTED LANDS.

Prior to the fiscal year 1900, the unallotted grazing lands on certain Indian reservations were leased in an informal manner, whereas after

1900 leases for such lands were based upon competitive bids, after public advertisement, and the increase in the rate per acre per annum, and in the tribal income, shows the wisdom of the change in the leasing system.

For the unallotted lands of the Apache, Kiowa, and Comanche Indians, the average rates received prior to 1902, were 10 cents per acre; for 1902, 1903, and 1904 the average price was 30¾ cents.

The rate for the Wichita lands for 1898, was 5½ cents, for 1899, 9 cents, and for 1900, 1901, and 1902, 11⅛ cents. These lands were allotted in July, 1902.

The price received for the unallotted lands of the Ponca Indians, increased from 7⅛ cents per acre in 1898 and 1899 to 11 cents in 1900; to 21⅝ cents in 1901 and 1902; to 36⅛ cents in 1903, and for 1904 the rate was 29¼ cents.

For the Otoe and Missouria lands, 6⅛ cents were received in 1900, and 16 cents in 1901, 1902, and 1903, and in 1904, 15⅛ cents.

The Kaw, or Kansas Indian lands were leased under the old system during 1898, 1899, and 1900, at 10 cents per acre; in 1901 the average rate received was 37⅝ cents per acre, whereas for 1902 and 1903, 50 cents per acre was realized, since which time the surplus lands have been divided among the members of the tribe.

In 1898 and 1899, 431,640 acres of Osage lands were leased at 10 cents per acre; in 1900, 591,373 acres were leased at the same rate; whereas, during 1901, 1902, and 1903, 20 cents per acre was received, and the number of acres leased was increased from 591,373 acres in 1900 to 751,200 acres in 1902 and 1903. Since June 30, 1903, 109 grazing leases have been made, covering 503,672 acres, at an average price of 31.08 cents per acre, amounting to $157,558.

Leases for Omaha lands for 2,727 acres, for one year from May 1, 1904, were made at an average rate of $1.56 per acre.

On the Rosebud reservation 209,702 acres were leased for five years from June 1, 1904, at an average of 4 cents per acre.

SALE OF ALLOTTED LANDS.

Mention was made in my last annual report of the extension of the amended rules promulgated for the sale of inherited Indian lands to the sale of allotted lands of certain living Indians, whose allotments, by special provision of law, may be sold for their benefit, viz:

Citizen Potawatomie and Absentee Shawnee, Wyandot, Peoria and Miami, and certain Chippewas in Michigan.

The amended rules in question provided for the sale of these lands only under sealed bids.

Since the extension of said rules to the lands mentioned, there has

been a considerable falling off in the sales, but in most cases an increase in the price per acre received, thus:

From August 15, 1903, to August 15, 1904, only 73 conveyances had been made by Citizen Pottawatomie and Absentee Shawnee Indians, at an average price per acre of $10.35½, as against an average of $5.98 per acre the previous year.

During the same time 14 conveyances were made by the Peoria, Miami, and Wyandotte Indians, at an average of $13.27⅔ per acre; the average for the previous year was $15.21.

Twenty-six conveyances were made by the L'Anse and Ontonagon bands of Chippewas in Michigan, at an average of $2.70½ per acre.

Six conveyances were made by the Bad River, Red Cliff, and Ontonagon bands of Chippewas in Wisconsin, at an average of $11.29⅓ per acre, as against $6.32 the previous year.

Seven conveyances were made by the Saginaw, Swan Creek and Black River bands of Chippewas in Michigan, at an average of $10.03 per acre, the average for the previous year having been $13.64.

INHERITED LANDS.

As stated in my report for the year ended June 30, 1903, provision was made by the act of May 27, 1902 (32 Stat. L., 275), for the sale of allotments of deceased Indians, under certain conditions, subject to the approval of the Secretary of the Interior.

Rules provided for by said act, to govern such sales, were originally approved by the Department June 26, 1902, but it has been found necessary from time to time to amend these rules in order to meet constantly changing conditions.

In connection with these sales the Commissioner of Indian Affairs in his report says:

> Under present conditions, so far as the Indian is concerned, the sale of these lands produces few beneficial results, but, on the contrary, has brought about conditions so detrimental to the Indians' welfare and so demoralizing to the community in general as to call for immediate and serious consideration. To the average land speculator the Indian seems to be considered common prey, and there has been disclosed through the reports of special agents designated to make investigations the existence of cliques and combinations of schemers in the vicinity of nearly every agency where large quantities of land are being sold, who, by various means, fleece the Indian of the last penny within a few hours after the agent has turned over to him the proceeds of a sale.

After most careful consideration of all the facts in connection with the sale of these inherited lands, and in view of the many representations made to the Department of abuses and questionable operations growing out of such sales, and the use or misuse of the proceeds by the beneficiaries, it became necessary to provide additional safeguards

in order to prevent the squandering of the moneys derived from this source. An amendment to paragraph 1 of section 1 of the amended rules, approved October 2, 1902, for the conveyance of inherited Indian lands was approved September 19, 1904, and it is confidently anticipated that it will provide a remedy for many of the evils and abuses complained of. It reads as follows:

> Owners of such inherited Indian lands desiring to sell the same may petition the Indian agent or other officer having charge within whose territorial jurisdiction the land is located, praying that the land therein described may be sold under said act in accordance with the regulations, and agreeing that the proceeds to be derived therefrom shall be placed with the nearest and most convenient United States depository to the credit of each heir in proper proportion, subject to the check of such heirs, or in case of minors, subject to the check of their recognized guardian, for amounts not exceeding $10 to each in any one month, when approved by the agent or other officer in charge, and only when so approved, and for sums in excess of $10 per month, upon the approval of such agent only when specifically authorized by the Commissioner of Indian Affairs. The petition shall be signed by all the lawful heirs, and, in case of minors, by their legal representatives, and shall set forth every material fact necessary to show full title under the laws applicable.

It is the desire of the Department that the proceeds from these lands shall be used solely for beneficial purposes. Any Indian heir who wishes to expend the money coming to him for improvements to his own allotment, or for other legitimate purposes of benefit to himself and family, and who is competent to properly care for said funds and judiciously manage his business affairs, may receive such moneys in full, after having satisfied the Commissioner of Indian Affairs that he is competent to so manage his affairs. And the settlement of any legitimate indebtedness incurred by these persons, due merchants or others, will doubtless be approved by that officer.

It appearing that the fees collected in each case failed to provide a sum sufficient to pay for advertising the sale of these inherited lands in the weekly edition of the newspapers of widest circulation in the county in which said lands are situated, and in order to avoid all deficits in this connection, the rules were still further amended, September 13, 1904, so as to provide that hereafter the poster method shall be followed exclusively, but the fee for advertising will be continued as heretofore. This fee must be paid by the purchaser of the land. These posters are to be prepared and printed monthly and then posted in the larger post-offices in the vicinity. It is believed that by this method the land will be better advertised and at much less expense.

In the report of the Commissioner of Indian Affairs there appears a detailed statement which shows that there has been sold to June 30, 1904, 1,236 separate tracts of inherited Indian lands, aggregating 122,222.52 acres, for a total sum of $2,057,464.50, at the average price of $16.83 per acre. Of this number there were sold in Oklahoma 485

tracts, containing 62,314.65 acres, for $1,002,101.63. The Commissioner states that "so small a portion of the proceeds from the sale of inherited lands is used by the Indians in improving their own allotments that the benefits thus derived are hardly entitled to consideration." He states also that his office has no detailed report of these expenditures for improvements, except with respect to the Omaha Indians in Nebraska. In the past three years, during only a portion of which inherited lands have been sold, improvements to Omaha allotments have been made in 57 separate cases, at a cost estimated at $44,000. The Omahas are considered one of the most progressive tribes. Yet it is shown that out of a total of approximately $59,000 received from the sale of inherited lands, and the large sums received on leased lands, estimated at $72,000 in three years, less than 20 per cent was expended in improvements.

LOGGING ON INDIAN RESERVATIONS.

Under rules and regulations approved by the President, December 6, 1893, allottees on the Bad River Reservation, in Wisconsin, were authorized to sell on stumpage all of the timber, standing or fallen, on their respective allotments, to Justus S. Stearns, of Ludington, Mich., under contracts made informally, without competition, between Mr. Stearns and the respective allottees, for terms not exceeding ten years.

The business of logging on these allotments was fairly and satisfactorily conducted, but it was thought that better prices should be obtained for the various classes of timber, and that some method of cutting the same should be adopted which would insure a satisfactory new growth after lumbering. The Department, therefore, requested the Department of Agriculture, under date of September 12, 1902, to cause an examination to be made of the timber on said allotted lands, with the view of improving the methods, as above stated. The desired examination was conducted by the Bureau of Forestry, and certain recommendations were made by the experts of that Bureau which, in their judgment, would prevent future waste and insure new growth on tracts that had been cut over.

Based upon these recommendations, and after careful consideration of the whole subject with the general superintendent of logging for said reservation, a draft of rules and regulations embodying all the suggestions of the forestry experts was prepared by the Commissioner of Indian Affairs and submitted for the approval of the Department. The new regulations fixed a minimum schedule of rates for the different classes of timber considerably in excess of the old rates, and provided for the sale thereof only after due advertisement, under sealed bids to the highest or best bidder, and were approved by the Presi-

dent, December 29, 1902. The same rules have been extended to other reservations in Wisconsin, and timber operations thereunder have, from the higher prices obtained, resulted in increased net proceeds aggregating several hundred thousand dollars.

Under rules heretofore approved, mention of which was made in my last annual report, the business of the cutting and sale of timber on other reservations has been continued. During the year several contracts covering allotted lands on the *Lac du Flambeau Reservation*, in Wisconsin, expired, and the question arose as to renewal of the contracts with J. H. Cushway & Co., the authorized contractors. The Department, after considering the renewal proposition in all its phases, authorized the Flambeau Lumber Company (successor to Cushway & Co.) to renew the expired contracts with the allottees, at a scale of prices approved by the Department. This having been accepted by the Flambeau Lumber Company, 46 extension agreements were executed with allottees, and 4 timber contracts under the original authority (September 22, 1892) were made and approved.

On the *Bad River*, *Red Cliff*, *Lac Court Oreilles*, and *Grand Portage reservations*, in Wisconsin, timber operations have been properly conducted under regulations approved by the President and Secretary of the Interior, as above stated.

On the *Red Lake Reservation*, in Minnesota, operations for the disposal of a quantity of timber which had been blown down in a wind storm (in July, 1902) were carried on by the Grand Forks Lumber Company, under regulations approved by the President, September 7, 1903. These operations are reported to have been very successfully conducted, and to have netted the Indians $30,000.

A contract was also awarded to W. A. Gould, of Bemidji, Minn., for the cutting and removal of another quantity of blown-down timber on this reservation, but this has not yet been cut.

On the *White Earth Reservation*, Minn., a large quantity of timber was blown down during December, 1903, and under regulations approved by the President, December 29, 1903, contracts were awarded to Indians of the reservation for the cutting and sale of the same. These operations were successfully conducted, and a profit to the Indians of $19,289.40 is reported.

Leech Lake Agency, Minn. In accordance with the provisions of the act of April 21, 1904, regulations to govern the sale of timber by allottees under the jurisdiction of said agency, also a form of contract, have been approved. No contracts have yet been submitted for approval.

IRRIGATION ON INDIAN RESERVATIONS.

The appropriation for irrigation on Indian reservations for the fiscal year 1898 was $30,000, the bulk of which was expended on the following reservations:

Southern Ute, Colo	$8,500
Uintah, Utah	9,210
Wind River, Wyo	1,525
Yakima, Wash	1,946
Flathead, Mont	3,598
Pyramid Lake and Walker River, Nev	900
Navajo, Ariz	500
Western Shoshone, Nev	500
Total	26,679

At this time two very extensive and important systems of irrigation on Indian lands, both, however, to be paid for out of the Indians' own funds, were in course of construction, viz:

On the Fort Hall Reservation, in Idaho, under a contract with the Idaho Canal Company, which was approved on October 22, 1896, the said company was constructing a system of irrigation which would deliver 300 cubic feet of water per second at the points on the reservation designated in the contract, the cost of the same to be $90,000.

On the Crow Reservation, in Montana, a very extensive system was being constructed under Department supervision. This system was then well advanced, with 12 miles of canal finished and the head gate well under way.

The Indian appropriation act for the fiscal year 1899, approved July 1, 1898, provided for the appointment of an Indian inspector, who "*shall be an engineer competent in the location, construction, and maintenance of irrigation works.*"

Walter H. Graves, an engineer, who had for several years been in charge of the construction and operation of irrigation works on the Crow Reservation, Mont., above mentioned, was appointed to the position of *engineer inspector*, as provided for in said act, and all the irrigation work on the various reservations was, during the year 1899, carried on under his supervision and advice. The act above noted increased the appropriation for irrigation to $40,000. The larger part of this sum was apportioned to the following reservations and expended thereon during the year:

Southern Ute, Colo.
Uintah, Utah.
Wind River, Wyo.
Yakima, Wash.
Flathead, Mont.
Pyramid Lake, Nev.
Western Shoshone, Nev.
Navajo, Ariz.
San Carlos, Ariz.
Colorado River, Ariz.
Lemhi, Idaho.

During this year the Crow Indians made an agreement with Inspector W. H. Graves, by which the sum of $100,000 of their grazing funds was set aside for the completion of their irrigation system. Walter B. Hill, of New Hampshire, was appointed to superintend the work.

The appropriation of $40,000 for the year 1900 was the same as for the year 1899.

During this year the matter of a proper water supply for the Pima Indians on the Gila River Reservation, in Arizona, received much attention. The waters of the river having been so largely appro priated by settlers above the reservation, it was nearly dry on the reservation during the irrigation season. Proper legal proceedings were taken to stop the diversion of that portion of the waters of the river to which they were entitled. A bill authorizing the construction of a reservoir near San Carlos, to provide water for irrigating the said reservation, was favorably reported upon by the Department, but failed to become a law. An appropriation of $30,000 for the temporary support of these Indians was secured.

During this year, also, the work on the Big Horn Canal, on the Crow Reservation, progressed very satisfactorily, and about $66,000 of Crow money was expended by Superintendent Hill, most of which was paid to the Indians themselves for work on the system.

The appropriation for the fiscal year 1901 was $50,000, and the act also authorized the Secretary to employ two skilled irrigation engineers as superintendents of irrigation, whose duty would be to secure the construction of ditches and other irrigation works in a substantial and workmanlike manner. About $31,300 of the appropriation was expended on the various pueblos and on the Southern Ute, Navaho, and Wind River reservations, and the balance was used for repairs, maintenance, and ditch extension on various other reservations, and in the payment of certain employees engaged in irrigation work.

During this year very earnest efforts were made by the Department to secure a system of irrigation for the Indians occupying the diminished Southern Ute Reservation, in Colorado, and steps were taken, upon the recommendation of Inspector Graves, looking to the purchase of perpetual water rights for these Indians.

Work was continued on the Big Horn ditch on the Crow Reservation, and the results were very satisfactory, the head gate having been finished and the work on the ditch having progressed so far as to make practically 18 miles of the Big Horn Valley irrigable therefrom.

The appropriation for 1902 was $100,000, just double the amount for the preceding year. The scope of the work was accordingly much extended, and expenditures were made on reservations that would not otherwise have been possible.

Unfortunately, during the latter part of this fiscal year, the investigation of existing systems and the extension of the work on other res-

ervations were seriously hindered by reason of the illness and subsequent resignation of Irrigation Inspector W. H. Graves. Several important projects therefore had to be suspended until a new inspector could be appointed and enter upon duty. Mr. W. H. Code was appointed, but did not begin work until after the close of the fiscal year.

For the fiscal year 1903 the appropriation for irrigation was increased to $150,000, with provision for the employment of irrigation engineers, as in the two preceding years.

The new irrigation engineer, Inspector W. H. Code, was kept almost continuously in the field, inspecting and reporting upon work already done or under way, consulting with and advising the irrigation experts on the several reservations where work was in progress or contemplated, and in giving personal supervision to several important projects which had been approved by the Department.

On the Pima Reservation, in Arizona, and certain of the Mission reservations, in California, it was found, after careful investigation by the inspector, that canals would be impracticable. Upon his recommendations, efforts were made to establish a permanent water supply for irrigation purposes, in each case, by means of a series of artesian wells, arranged in groups, from which the water would flow to a central pumping station, whence it would be pumped into a reservoir and conducted therefrom, as needed, into distributing ditches. In both the cases mentioned the experiment, although conducted on a very limited scale, has met with gratifying success, and on the Pima Reservation steps are being taken to extend the system by the construction of a larger number of wells and the installation of a larger pumping plant.

During this fiscal year, also, the Department authorized an extensive system of irrigation on the Yakima Reservation, in Washington, which is designed to irrigate about 20,000 acres of land. This work was done by contract, but under the personal supervision of Inspector Code. The main canal and the most important structures, that is, the head gate, masonry abutments at the intake on the Yakima River, timber drops, etc., and the principal structures on the first large lateral, have since been satisfactorily completed.

One hundred and twenty thousand nine hundred and fifty dollars of the above appropriation was expended during the year as follows:

Pueblos of New Mexico	$11,200
Crow Reservation, Mont	39,000
Southern Ute, Colo	11,100
Walker River, Nev	2,350
Western Shoshone, Nev	3,000
San Carlos, Ariz	9,300
Pima, Ariz	15,000

Navajo, Ariz	$13,000
Klamath, Oreg	7,000
Mission, Cal	10,000
Total	120,950

An appropriation of $150,000 was made for irrigation for the fiscal year 1904.

Expenditures from this fund were authorized for irrigation work on various reservations to the full limit of the appropriation. In all cases these expenditures were made under the direct supervision of the irrigation inspector, Mr. W. H. Code, or one of the special superintendents of irrigation in the field, and only after careful field investigation and subsequent examination in the Department.

Much success has attended the efforts of the Department along this line, but in no case has the success been more gratifying and encouraging than in the matter of expenditures for the benefit of the Indians on the Pima Reservation in Arizona during the past year. Reference was made in my last annual report to the proposition of Inspector Code to establish for these Indians a permanent water supply for irrigation purposes by means of a series of artesian wells connected with a central pumping station, from which the water would be stored in reservoirs for use as needed in the Indians' irrigating ditches. In accordance with this proposition five wells were put down and a steam pumping plant established. This plant is reported to be the most substantial and efficient steam irrigation plant in Arizona, the five wells discharging, approximately, 2,000 gallons per minute, sufficient to properly irrigate 250 acres of land if pumped nine hours per day, or 600 acres if pumped continuously. A test run of the plant showed that 3 cords of mesquite wood were sufficient for a twenty-four hours' run. The inspector reported:

> There seems to be an abundant underground water supply in the valley of the Gila, and the operation of the Sacaton plant proves this. * * *
>
> There has been some apprehension about the character of the water furnished by our plant, hence while at the agency I expressed some of it to the chemist of the University of Arizona at Tucson. The analysis revealed a water much superior to that furnished by other pumping stations in the Salt River Valley.

Upon the inspector's recommendation the sum of $4,000 was authorized for the employment of an experienced driller with drilling rig to further perforate the present wells, and, subsequently, if deemed advisable, to put down two more wells, the steam plant having sufficient power to lift nearly double the above-mentioned quantity of water.

As stated above, the success in this case (notwithstanding the fact that the project is yet in the experimental stage) is highly gratifying, as all efforts heretofore made, during a period of about eighteen years,

to provide a sufficient water supply for these Indians have signally failed, and none of the plans suggested or experiments made have succeeded, except the plan of Inspector Code to raise water from the underground supply by pumping from wells. It is confidently believed that if legislation can be secured to carry out the plans of the Inspector and the Geological Survey along the lines above indicated, the chief difficulty in the way of making these Indians self-supporting will be removed.

SALE OF LIQUOR TO INDIANS.

The experience of the past year strongly emphasizes the great need of an adequate fund for the employment of detectives and special agents whose duty it shall be to investigate cases of liquor selling to Indians, and secure the necessary evidence to convict the offenders. As stated in my last annual report, Indian inspectors, special Indian agents, school supervisors, and other officers of the Indian Department were active during the year in their efforts to detect and suppress this unlawful traffic, but owing to the difficulty of obtaining proper evidence these efforts, in most cases, fell short of conviction.

Nine cases were reported to the Attorney-General during the fiscal year ending June 30, 1904, with request for investigation by a special agent of his Department. The Indian Office reports that a number of convictions were secured, but that the conditions in some localities remain unchanged.

Special officers, to be under the immediate direction of this Department, are urgently needed, and in order to maintain even a small force of this kind, an appropriation of not less than $10,000 will be necessary. The fund at the disposal of the Department of Justice for such work is insufficient to meet all the demands that are made upon it, and it is understood that there is only one special agent available for Indian work, hence the necessity for a fund which could be used by this Department as occasion may require, in the employment of special service to secure the conviction and punishment of violators of the liquor laws on Indian reservations.

The cases reported to the Attorney-General, as above stated, were not confined to any particular locality, but embraced almost every section of the "Indian country," as will be seen from the following list:

Colville Reservation, Wash.
Omaha Reservation, Nebr.
Pueblos under Santa Fe School, N. Mex
Kiowa Reservation, Okla.
San Jacinto (Mission Indians), Cal.
Needles, Cal.
La Pointe Reservation, Wis.
Cattaraugus Reservation, N. Y.

Since the beginning of the current fiscal year the following additional cases have been reported:

Menomonee Reservation, Wis.
Rainy Lake and Rainy Mountain, Minn. (Chippewa).
Fort McDermitt, Nev.
Winnebago Reservation, Nebr.
Hoopa Valley Reservation, Cal. (in this case an Indian is now under sentence of death for murder while under the influence of liquor).
Turtle Mountain, N. Dak. (in this case 9 Indians lost their lives from drinking so-called "Florida water," sold to them, as is believed, for whisky).
Red Lake Reservation, Minn.
Round Valley, Cal.
Fort Lapwai, Idaho.
Devils Lake, N. Dak.

Another effort will be made during the ensuing session of Congress to secure the necessary appropriation.

INDIAN TERRITORY.

The largest part of the Indian Territory is occupied by the Five Civilized Tribes, viz, the Seminole, Creek, Cherokee, Choctaw, and Chickasaw tribes or nations of Indians. In the northeast corner of the Territory are some eight small tribes, comprising the Quapaw Agency, which is under the care of the superintendent of the Seneca School and acting agent.

The work of changing the communal to individual ownership of title in the members of the Five Civilized Tribes, and the disposition of town sites, and the collection of the various revenues of the several nations has been continued during the past year under the supervision and direction of the Commission to the Five Civilized Tribes, known as the "Dawes Commission," and the United States Indian inspector and the Indian agent for the Union Agency and the superintendent of the Sulphur Springs Reservation, in the Chickasaw Nation.

It is a source of great satisfaction that the work is so near completion, and that the rights of the several tribes and the individual members, as well as other interested parties, have been carefully maintained.

COMMISSION TO THE FIVE CIVILIZED TRIBES.

Since March 31, 1904, the Commission has been composed of only three members, on account of the resignation of Commissioner Hon. W. E. Stanley. The report of the Commission for the fiscal year ending June 30, 1904, which is appended hereto, page 257, Exhibit A, sets forth with clearness and great particularity the work done, and the great difficulties which have been overcome in the performance of the arduous tasks imposed upon the Commission by the various enactments since its creation by the act of March 3, 1893 (27 Stat. L., 645).

The last fiscal year has been the most successful in the history of this Commission in the way of actual work accomplished. The long tedious task of enrolling the members of the Five Tribes has at last been brought to a close, except as to a comparatively small number of cases wherein final action is necessarily withheld for various causes. The Commission was then able to turn its attention to the allotting of lands, which has progressed as rapidly as could well be expected in view of the adverse conditions which had to be dealt with.

The only legislation of importance affecting the work of the Commission was embodied in the Indian appropriation act approved April 21, 1904 (33 Stat. L., 189). This act contemplates the completion of the work assigned to the Commission not later than July 1, 1905, and provides for the termination of its existence upon that date. It carried an appropriation of $265,295 for the use of the Commission, being the sum recommended as sufficient to complete the work within the time prescribed. A review of the various laws relating to the work in Indian Territory reveals a number of conflicting provisions, and by operation of these laws certain branches of the work can not be completed within the time allowed. The legislation necessary to reconcile these incongruities and provide for the completion of such work as necessarily goes over beyond July 1, 1905, should, of course, be enacted prior to that date.

The condition of the work in the different tribes at the close of the fiscal year may be briefly summarized as follows:

In the Seminole Nation the work is completed save as to the designation of homesteads and the patenting of the lands to the individual allottees. Under the provisions of the agreement with the Seminole, approved July 1, 1898 (30 Stat. L., 567), deeds are to be issued upon the expiration of the tribal government, March 4, 1906. Preparation is now being made to open a land office at Wewoka, the Seminole capital, for the purpose of affording the Seminole an opportunity to designate their homestead reservations, so that, at the proper time, patents may be issued with the least possible delay and expense. In order to conclude the affairs of the Seminole, however, it is essential that provision be made to dispose of 18,630.64 acres of land not absorbed in allotment.

The work in the Creek Nation has been somewhat prolonged by failure of the Creek Nation to make an agreement which would have the effect of finally closing the citizenship rolls. So long as the enrollment of citizens continued, it was impracticable to discontinue the Creek land office. To meet this exigency it was necessary to exercise the authority conferred upon the Secretary of the Interior by the act of March 3, 1901 (31 Stat. L., 1058). In accordance with a provision of the act referred to, a departmental order has been issued, fixing September 1, 1904, as the date upon which the citizenship rolls of the

Creek Nation shall be finally closed, after which no application for enrollment as a member of the Creek tribe will be received by the Commission. Inasmuch as nearly every citizen who has been finally enrolled has already selected an allotment, and patents have been issued for practically all allotments made, this action should enable the Commission to close up the Creek work at an early date.

The enrollment work in the Choctaw and Chickasaw nations was practically completed at the close of the fiscal year, although certain cases depending upon the action of the Choctaw and Chickasaw citizenship court and other contingencies have not been disposed of. The cases of 3,520 applicants were appealed to the citizenship court, 106 of whom have been admitted to citizenship, 790 have been denied, and the cases of 101 dismissed. The rights of more than 92 per cent of the whole number of applicants for enrollment in these tribes have been finally determined, and approximately 85 per cent of those whose enrollment has been finally approved have already selected their allotments. Something over 5,000,000 acres of the Choctaw-Chickasaw lands have been allotted. Allotment and homestead certificates covering the greater number of such selections have been written and delivered to the allottees, and the preparation of Choctaw and Chickasaw patents has already been commenced by the Commission. It seems reasonably certain that the work in these tribes, except possibly as to contests, will have been completed by July 1, 1905.

In connection with the allotment of lands of the Choctaw Nation, it has developed that approximately 12,600 acres of land containing pine timber of commercial value was omitted from the reports made by timber estimators employed by the Commission. The land in question is graded very low, and it has been deemed inadvisable to allot the same without taking into account the timber located thereon. The land therefore is being withheld from allotment, with a view to special legislation providing for the estimation and appraisement of the timber located thereon.

In the Cherokee Nation the work is not so far advanced. The delays caused by litigation as to the rights of freedmen and intermarried whites have prevented the completion of the final rolls, and the work of allotment has been seriously retarded by litigation and new legislation concerning the rights of the Delaware-Cherokees. The Cherokee land office was closed to the public during more than half of the year, and a great amount of work has devolved upon the Commission which was not anticipated when the estimate of time and money necessary to complete the business was made. But in spite of these delays more than 1,250,000 acres or nearly 30 per cent of the allotable land in the Cherokee Nation has been alloted, and it seems probable that the bulk of the work will have been completed by July 1, 1905.

The large number of allotment contests in the Choctaw, Chickasaw, and Cherokee nations has given rise to an enormous amount of work which can not, under the agreements, be completed prior to the date fixed for the dissolution of the Commission. The valuable mineral lands in these tribes, as well as the highly improved condition of the agricultural land and the small acreage of an allotment in the Cherokee Nation, have resulted in a great number of controversies. At the close of the fiscal year 2,682 contests were pending before the Commission and the Department. Inasmuch as an allotment may be contested at any time within nine months after its selection, it is reasonable to suppose that the filing of contests will continue for some time after allotment has been completed, and a considerable amount of this work will of necessity go over beyond July 1, 1905.

The rapid development of Indian Territory during the past year is evidenced by the activity in the establishment of town sites. Under the act of March 3, 1903 (32 Stat. L., 982), lands may be sold by the allottees for town-site purposes where stations are located along lines of railway, when recommended by the Commission and approved by the Department, without regard to the restrictions imposed by the agreements with the various tribes. Since this act became effective only one segregation of land for town-site purposes has been made under former laws, but 48 towns or additions to towns have been sold under the act of March 3, 1903, during the past year. A number of applications to sell lands for town-site purposes have also been refused because the allottees were not shown to possess sufficient business ability to justify the Department in removing the restrictions from their allotments.

While the work of the Commission has been subject to serious delay in some of its branches, it is believed that its status at the close of the fiscal year is all that could reasonably be expected.

On May 14, 1904, the Secretary to the President transmitted a letter from Senator Allison, suggesting that the work of the Commission in connection with applications for citizenship in the Choctaw and Chickasaw nations "should be committed to three lawyers of ability and integrity, gentlemen entirely removed from the Territory and Territorial influences, who should go there, take the testimony, and make the proper decision in each case," with a request for a report upon said letter. The suggestion did not seem advisable to me and I so reported on July 11, 1904, copy of which is appended hereto, page 294, Exhibit B.

INDIAN INSPECTOR.

Section 27 of the act of June 28, 1898 (30 Stat. L., 495), declares "that the Secretary of the Interior is authorized to locate one Indian inspector in Indian Territory who may, under his authority and direc-

tion, perform any duties required of the Secretary of the Interior by law relating to affairs therein." Under the authority conferred by said section, Mr. J. George Wright has continued in charge of the work specially intrusted to his supervision, and has submitted his sixth annual report, which shows in detail the progress of the work during the past fiscal year.

Attention is called by him to the fact that the number of inhabitants other than members of the tribes was shown by the census of 1900 to be over 300,000, and he estimates that the number has increased to at least double that number since that time.

The inspector calls attention to the fact that the occupants of town lots are receiving titles to the same, that the work of allotting the lands to the members of the tribes is approaching an end, and that temporary provision has been made to assist in educating the children of noncitizens and for the care and support of the insane, with the object of winding up the tribal affairs of the several nations on March 4, 1906, in accordance with the provisions contained in the agreements made with the several nations.

The population of the several tribes is approximately as follows: The Seminole, 2,753; the Choctaw, 23,573; the Chickasaw, 9,713; the Cherokee, 35,255; the Creek, 15,359.

Reference is made to the agreements with the different nations and the dates of their ratification by Congress and the tribes, also to the act of June 28, 1898, commonly called the "Curtis Act," and other legislation enacted by Congress affecting the status of the tribes, and he transmits copies of said agreements and of the legislation contained in the various acts above referred to.

The inspector states that his office has had little to do with the Seminole Nation during the past fiscal year, that the allotments to the members of said tribe are complete, and that the allottees are authorized to sell or dispose of their timber without restriction, and also to make agricultural or grazing leases of their lands with the approval of the tribal executive. Mineral leases in the Seminole Nation are declared to be invalid unless made with the tribal government, by and with the consent of the allottee, and approved by the Secretary of the Interior.

Attention is called to the sale of lands in the town site of Wewoka, which was declared invalid by the Department on March 19, 1904, and to the recommendation made to Congress on March 22, 1904, at which time there was transmitted the draft of a bill to remedy the illegality of said sales. The bill, however, did not pass.

MINING.—The mining of coal and asphalt in the Choctaw and Chickasaw nations has continued during the past fiscal year under the leases theretofore approved by the Department, in accordance with the pro-

visions of the Atoka agreement contained in section 29 of the Curtis Act. The supplemental agreement made with said nations, contained in the act of July 1, 1902 (32 Stat. L., 641), and ratified by the nations on September 25, 1902, declared that "no lease of any coal or asphalt lands shall be made after the final ratification of this agreement, the provisions of the Atoka agreement to the contrary notwithstanding;" and said agreement also provided that the land covered by the leases already approved and other lands found to be valuable on account of their coal and asphalt deposits should be segregated from allotment and sold at public auction, the deposits under town sites to be sold separately. Under said provision there were segregated by written order on March 24, 1903, 445,052.23 acres of land, of which area 111,750 acres were included in leases existing at the date of the ratification of said supplemental agreement.

The manner of sale of said lands was changed by the Indian appropriation act approved April 21, 1904 (33 Stats., 189), which required that the unleased lands which were required by said supplemental agreement "to be sold at public auction for cash," and all other unleased lands and deposits of like character in said nations, segregated under any act of Congress, should be sold under the direction of the Secretary of the Interior in tracts not exceeding 960 acres to each person, after due advertisement, upon sealed proposals, under regulations to be prescribed by the Secretary of the Interior and approved by the President, with authority to reject any and all proposals. It was further provided in said act that the President should appoint a commission of three persons, one on the recommendation of the principal chief of the Choctaw Nation, who shall be a Choctaw by blood, and one upon the recommendation of the governor of the Chickasaw Nation, who shall be a Chickasaw by blood, which commission shall have the right to be present at the time of the opening of bids, and be heard in relation to the acceptance or rejection thereof.

A proviso to said act of April 21, 1904, declared "that all leased lands should be withheld from sale until further direction of Congress." Regulations were duly made and promulgated providing for the manner in which said lands and deposits should be sold, sealed bids to be made to the Commissioner of Indian Affairs at Washington, and be opened on certain dates for the respective districts as follows:

No. 1, McAlester district (coal), October 3, 1904, at 2 p. m.
No. 2, Wilburton-Stigler district (coal), December 5, 1904, at 2 p. m.
No. 3, Howe-Poteau district (coal), February 6, 1905, at 2 p. m.
No. 4, McCurtain-Massey district (coal), April 3, 1905, at 2 p. m.
No. 5, Lehigh-Ardmore district (coal), June 5, 1905, at 2 p. m.
No. 6, Unleased asphalt lands, August 7, 1905, at 2 p. m.

Notice of the sale of said mineral lands and deposits was published extensively in the leading newspapers, and in addition printed circu-

lars and maps giving a detailed description of the lands to be sold, and dates when the bids were to be opened, were furnished to all persons applying for the same.

On October 3, 1904, the bids received for the tracts in the McAlester district, No. 1, were opened in the office of the Commissioner of Indian Affairs, in the presence of two members of the Commission, Messrs. John M. Wilson, chairman, appointed by the President, and Thomas E. Sanguin, Choctaw member of the Commission; Mr. Walter Colbert, the Chickasaw member being absent, but he afterwards concurred in the report of the Commission.

The Commission reported that there were received only 32 bids, covering 28 of the 74 tracts in said district No. 1, and no bids whatever were received for the other 46 tracts. The highest amount bid per acre was $20 and the lowest 51 cents, the average price being about $7.74. The Commission recommended that all the bids be rejected, and called attention to the fact that the Choctaw and Chickasaw nations were receiving a royalty of 8 cents per ton for all coal mined under existing leases, which would amount to "about $230 per acre" for the coal in the land so mined. It was further suggested by the Commission that the sums bid did not amount to more than the value of the surface of the land, without considering the coal thereunder or the nearness of the land to towns, cities, or railways. The Department concurred in the recommendation of the Commission, and on October 11, 1904, all of the bids were rejected, and the checks deposited therewith were directed to be returned to the bidders.

Action has been taken by the Department during the past fiscal year to ascertain the value of the improvements placed upon the mineral lands reserved and authorized under the supplemental agreement contained in the act of July 1, 1902 (32 Stat. L., 641), and a report has been received from the inspector having the matter in charge, which is being considered, and when a conclusion shall be reached payment will be made to the owners of said improvements, as directed by section 58 of said act.

The act of April 28, 1904 (33 Stat. L., 544), authorizes the Secretary of the Interior to segregate and reserve from allotment certain tracts of land therein described, upon which improvements had been made by mistake by the lessees of adjoining lands, and to add such tracts to the coal-mining leases of lands contiguous thereto. It was also provided in said act that the lessees shall pay to the Indian or Indians who had applied for any of said tracts as allotment, or who were in possession thereof, the value of the improvements placed on the land by them, which should be ascertained under the direction of the Secretary of the Interior. The inspector has been directed to ascertain the value of the improvements placed upon said land by the Indians desiring to allot the same, and when said payment shall have

been made the lands will be included in the mining leases covering the contiguous lands.

The whole number of coal leases in effect June 30, 1904, made with the mining trustees of the Choctaw and Chickasaw nations, is 113, and there were also 10 asphalt leases in effect on June 30, 1904. It appears that there have been transferred 14 leases, and that the output of coal since the passage of the Curtis Act is as follows:

	Tons.
July 1, 1898, to June 30, 1899	1,404,442
July 1, 1899, to June 30, 1900	1,900,127
July 1, 1900, to June 30, 1901	2,398,156
July 1, 1901, to June 30, 1902	2,735,365
July 1, 1902, to June 30, 1903	3,187,035
July 1, 1903, to June 30, 1904	3,198,862

Only a limited amount of asphalt is reported to have been mined, being less than 5,000 tons. It will be noted that while there has been an increase in the output each year, the increase for the last fiscal year is less than that of any previous year.

The total amount of royalty on the coal and asphalt placed to the credit of the Choctaw and Chickasaw nations during the past fiscal year is reported to be $276,311.54 for coal, and $1,500.06 for asphalt, a total of $277,811.60. Said amounts include the annual advance royalty required by the leases, and therefore varies from the amount of royalty paid on the coal and asphalt actually mined. The yearly increase in the amount of revenue received on account of coal and asphalt leases is shown by the following table:

July 1, 1898, to June 30, 1899	$110,145.25
July 1, 1899, to June 30, 1900	138,486.40
July 1, 1900, to June 30, 1901	199,663.55
July 1, 1901, to June 30, 1902	247,361.36
July 1, 1902, to June 30, 1903	261,929.84
July 1, 1903, to June 30, 1904	277,811.60

The leases require that the lessees shall mine each year a certain amount of coal, and wherever they have failed to do so they have been required to pay the stipulated royalty upon the number of tons which they have failed to mine under the stipulations in their respective leases.

The agreements made with the Creek and Cherokee nations authorized the members thereof to lease their allotments for mineral purposes with the approval of the Secretary of the Interior, and expressly declared that section 13 of the Curtis Act, which authorized the Secretary of the Interior to make rules and regulations in regard to the leasing of mineral lands in the Indian Territory, should not be effective in said nations. No mineral leases were made by the Secretary of lands in the Creek Nation, but in the Cherokee Nation thirteen mineral leases were made by the Secretary of the Interior under said

section prior to the time when the agreements were ratified. It is shown, however, that most of the lands covered by said leases have been allotted to the members of the respective tribes, and under the ruling of the Department the allottees become entitled to the royalties accruing from said leases.

Mining for oil in the Creek and Cherokee Nations has been carried on in three districts, viz: Bartlesville, Red Fork-Tulsa, and Muskogee, while the development of coal mines is carried on in the neighborhood of Henryetta and Tulsa in the Creek Nation, and at Dawson and Collinsville in the Cherokee Nation, most of it being done by the "stripping process."

The surveys of town sites have been continued with a limited force, and with the completion of Sulphur, the survey of all the towns—298 in number—will be ended. The area of the land included in town sites is 62,674.54 acres, as appears from the following table, giving the nation, the number of towns, and the acres:

	Towns.	Acres.
Creek Nation	25	10,538.14
Cherokee Nation	53	9,501.47
Choctaw Nation	90	18,940.40
Chickasaw Nation	130	23,694.53

Attention is called to the fact that by the act of May 31, 1900 (31 Stat. L., 221), the survey of towns was placed under the control of the Secretary of the Interior, and that the cost of the surveys made under the supervision of the inspector has been about $3 per acre, including all expenses of transportation to and from the several towns; and a comparison is made showing that the expense is much less than that incurred by the commissions under previous legislation. The importance of having accurate plats of the surveys is emphasized, and the fact that they are the foundation of the titles to town lots in the Indian Territory.

Appraisements in the Creek Nation have been completed, and nothing remains except the disposition of contests, which is being carried on by the inspector's office. The work of the town-site commissions in the Choctaw, Chickasaw, and Cherokee nations has made satisfactory progress during the past year, and in the Choctaw and Chickasaw nations the appraisements have been nearly finished.

While it is true that the work of the commissions in said nations during the fiscal year has progressed generally in a satisfactory manner, yet in some instances complaints have been made of excessive appraisements by the commissions, notably in the case of Hartshorne and Hugo, by the town-site commission of the Choctaw Nation.

The inspector refers to an incident which occurred since the close of the fiscal year, viz, on September 17, 1904, when Mr. Charles O. Shepard, chairman of the Choctaw town-site commission, was brutally assaulted by two men at Hartshorne, while engaged in the performance of his official duties. This assault was reported to the inspector on September 26, 1904, and he submitted a report thereon to the Department on September 30, 1904. The inspector states that as soon as possible after hearing of the assault he consulted the judge of the United States court at South McAlester, and was informed that the persons supposed to be guilty of the assault had been apprehended, and that the matter would receive prompt attention by the officers of the Department of Justice, and that he also requested the United States district attorney to prosecute with vigor the parties alleged to have committed the assault upon Mr. Shepard.

The Department had previously taken action in the matter, and on September 30 transmitted to the Attorney-General an account of said assault as it appeared in the public press, and requested him to instruct the proper officers of his Department "to use every effort possible to obtain the prosecution and conviction of the parties guilty of the offense."

Afterwards, on October 8, 1904, the inspector was advised of the receipt of his report dated September 30, 1904, and informed of the request of the Department on September 30 to the Attorney-General. He was also informed that the Attorney-General had been requested to appoint a special attorney for the prosecution of the offending parties, and to direct the United States marshal to furnish the town-site commission such protection as might be needed to enable it to complete its official work in the towns of Hugo and Hartshorne.

He was also directed to use every means within his power to protect the members of the town-site commission, and in case he should have information that they were being threatened or in danger of assault by evil-disposed persons, on account of the discharge of their official duties, to at once advise the Department by wire, in order that prompt and vigorous action might be taken by the Government for the prosecution of the parties interfering with the work of the commission. It was further stated to the inspector that "the Department expects every one of its officers in the Indian Territory to fully and fearlessly discharge his whole duty, and will see to it, as far as possible, that he shall be fully protected from interference or violence by persons who may be dissatisfied with his official action." The inspector was directed to inform the members of the Choctaw town-site commission and other officers subject to his supervision of the views and intention of the Department.

The Department has been advised of the appointment of special counsel to prosecute the parties who assaulted Mr. Shepard at Harts-

horne, and also those persons alleged to have interfered with the action of the commission in the sale of lots at Hugo.

On October 17, 1904, the Department of Justice transmitted a copy of a letter from the United States attorney for the central district stating that warrants had been issued at his request for the arrest of the persons alleged to have interfered with the town-site commission at Hugo, that one of the parties entered a plea of guilty and was fined $50, while the trial for the other was set for October 24, 1904. The United States attorney expressed the opinion that he did not believe that the commission would be interfered with in any way in the discharge of its official duties.

It is a matter of gratification that the prompt action of the officers of the Government in securing the arrest of the parties implicated has had the effect of insuring the safety of the members of the commission and other officers of the Department in the Indian Territory, and it is confidently believed that no further trouble will hereafter occur.

The supervision of the schools of four of the Five Civilized Tribes in the Indian Territory has been continued under the direction of Mr. John D. Benedict, whose work heretofore has been entirely confined to the schools of said tribes. He is assisted by a United States school supervisor, located in each of the Choctaw, Chickasaw, Creek, and Cherokee nations, who acts in conjunction with the tribal officers in charge of the tribal schools in their respective nations.

The school facilities for noncitizens were so meager that an appropriation was made by Congress in the act of April 21, 1904, which contained a clause which reads:

> For the maintenance, strengthening, and enlarging of the tribal schools of the Cherokee, Creek, Choctaw, Chickasaw, and Seminole nations, and making provision for the attendance of children of noncitizens therein, and the establishment of new schools under the control of the tribal school boards and the Department of the Interior, the sum of one hundred thousand dollars, or so much thereof as may be necessary, to be placed in the hands of the Secretary of the Interior and disbursed by him under such rules and regulations as he may prescribe.

Regulations were duly made and promulgated on June 27, 1904, whereby it was provided that the money appropriated by said act should be used in the employment of teachers and the payment of their salaries, and the residents of the neighborhood who desired schools were required to provide suitable schoolhouses and the necessary furniture, and pay all incidental expenses. Provision was also made for the attendance of white children in the Indian day schools (numbering about 400) when possible; and it is estimated that the expenses for the noncitizen children will amount to about $50,000, leaving the balance of $50,000, which it is believed will provide for additional schools to the number of 150.

The officers report commendable progress during the past year on account of the harmony existing between officers, teachers, and pupils, whereby better teachers have been employed, increased attendance of pupils secured, and some schools consolidated with others.

The total enrollment in the Choctaw Nation is reported to be 4,976, an increase of nearly 1,000 pupils over the previous year, and at little additional cost. It is further shown that over 8,000 white children attended the neighborhood or day schools in the Choctaw Nation and paid for their own books and a tuition fee to the teacher, while the nation paid its part for the education of the Indian children, thus furnishing schools for both the Indians and whites in localities where separate schools could not be maintained.

The Chickasaw Nation maintains 5 tribal boarding schools and 15 day schools. But little advance has been made in the attendance of the pupils and the efficiency of the schools.

There are reported in the Creek Nation 10 boarding schools—7 for Indian children and 3 for freedmen or colored children, besides 49 day schools, with an enrollment of 2,547 pupils, at a total cost of $76,159.

The Cherokee Nation supports 4 boarding schools and 175 day schools, with a total enrollment of 5,922 scholars, the total cost being $110,821.

Special reference is made to the suggestion of the superintendent of schools urging appropriate legislation to provide for the education of the children of the several nations when the tribal governments shall cease on March 4, 1906, and to the establishment of a general system of education for all children in the Territory. There can be no question that the matter should receive the careful consideration of Congress, and suitable legislation should be enacted so as to give good school privileges to every child of school age within the limits of the Territory.

The matter of providing a system of public schools in the Indian Territory has heretofore received the consideration of the Department, and the attention of Congress was also called to the subject. Under the clause in the Indian appropriation act of March 3, 1901 (31 Stat. L., 1058–1074), an investigation was made and the conclusion was reached that it was practical to provide a system of taxation sufficient to maintain a system of free schools in the Indian Territory. The report of said investigation was transmitted to Congress with a favorable recommendation on March 31, 1902, and it was printed in the House of Representatives document (No. 522, 57th Cong., 1st Sess.), but no legislation was enacted.

The appropriation of $5,000 made by said act of March 3, 1900, was not exhausted and the deficiency act of April 27, 1904 (33 Stat. L., 394–412), reappropriated the balance for the same object. Under said last-named act Dr. Jacob H. Hollander, an expert highly recommended

to the Department, was appointed May 4 last to make said investigation, and his report embodying recommendation relative to the matter of taxation in the Indian Territory is hereto appended page 297, Exhibit C.

The agreements with the several nations contain different provisions relative to the sale and leasing of lands by allottees. In the Creek and Cherokee nations the members are authorized to lease their allotments for grazing purposes not exceeding one year, and for agricultural purposes not to exceed five years. Mineral leases made by allottees in said nations require the approval of the Secretary of the Interior, and under the regulations prescribed, the term for which a mineral lease may be approved can not exceed fifteen years.

Under the provisions of the Atoka agreement, members of the Choctaw and Chickasaw nations may lease their allotments for a period not to exceed five years, without the right of renewal, and each lease is required to be made in writing, specifically designating the terms thereof, and is required to be recorded in the clerk's office of the United States court for the district within which the land is located within three months from the date of its execution. These leases can not be supervised by the Department, and do not require the approval of the Secretary. The allottees, however, may lease their allotments for mineral purposes also without the supervision of the Department. The allotments of minors can only be leased by guardians duly appointed by the United States court for the district in which the land is situated. All leases requiring the approval of the Department are transmitted by the United States Indian agent at the Union Agency, with his report thereon, through the inspector's office, who also indorses his recommendation upon the agent's report.

It is shown that during the last fiscal year 44 oil and gas leases and 29 coal leases made by members of the Creek Nation were approved by the Department, and 41 oil and gas leases and 4 marble and stone leases made by members of the Cherokee Nation, for the period of fifteen years when made by adult Indians, and when entered into with the guardians of minors the term of the leases is only during the minority of the ward. It is held that the status of freedmen shall be determined by their enrollment as such, notwithstanding that they may actually have some Indian blood.

No mineral leases made by persons married to Cherokee citizens have been approved, for the reason that the right of such persons to participate in the distribution of the common property of the nation is now pending in a suit before the Court of Claims, and until such suit shall be finally determined, no action will be taken by the Department looking to the enrollment of such persons.

Individual allottees in the Creek Nation are also permitted by the Department, upon proper showing, to extract mineral from their allotments.

Reference is made to the provisions in the several agreements with the different nations concerning the alienation of lands. Under said act of April 21, 1904, citizens of the several nations not of Indian blood and not minors may alienate their lands, except as to their homesteads, and the members of the nations of Indian blood, except minors, may have the restrictions upon the alienation of their allotments, except as to homesteads, removed upon application to the Indian agent, when his report shows that the applicant is of sufficient business capacity to manage his own affairs, and it will be for his best interests to have the restrictions removed.

Members of the Creek Nation may also be permitted by the Secretary of the Interior, under certain regulations, to sell their surplus land to the highest bidder, for not less than the appraisement made by an officer of the Department, but the deeds to the land are required to be approved by the Secretary of the Interior. Sales made by guardians must receive the approval of the court prior to the approval of the deeds by the Secretary.

The prior regulations of the Department relative to sale of Creek lands having proved unsatisfactory, they were amended on July 10, 1903, so as require the sale to be made to the highest bidder after publication, and the result has been to secure for the allottee a much higher price for his land.

These regulations were further amended on October 6, 1904, and the proceeds of the sale of the land were required to be placed with the most convenient United States depository, subject to the check of the allottee, or, if a minor, subject to the check of his guardian, in sums not exceeding $10 to each in any one month, said check to be approved by the agent or other officer in charge, and the approval of checks for larger amounts require specific authority from the Commissioner of Indian Affairs.

During the past fiscal year the agent reports action under the regulations of July 10, 1903, as follows:

	Number of tracts.	Acres.	Proceeds.
Tracts upon which bids have been opened:			
Land listed for sale	788	67,533.85	
Awarded and paid for	465	40,496.02	
Rejected, below appraisement	280	23,310.35	
Rejected by allottees	43	3,727.48	
Amount received by allottees for land sold			$488,150.64
Amount forfeited by successful bidders who refuse to complete bids			478.20
Tracts upon which bids have not been opened:			
Withdrawn by allottees	13		
Now being advertised	291		
Petitions canceled by death of petitioner before bids were opened	3		
Total	307	25,017.41	

The agent has received on account of deeds a total of $541,359.25, as shown by the following table:

Amount paid to allottees	$488,150.64
Amount covering deeds now under consideration	31,637.00
Amount returned to highest bidder on account of deeds being disapproved	9,331.10
Amount forfeited by successful bidders	478.20
Amount returned to unsuccessful bidders	11,762.31

The completed sales amount to about one-third of the land listed, and the price received for the land is a little more than $12.05 per acre.

The records of the Department show the disposition of allotted lands in the Creek Nation, under said regulations, to November 15, 1904, as follows:

Number of deeds to allotted lands in the Creek Nation approved under regulations of July 10, 1903, to and including November 15, 1904	475
Number of acres embraced in the above number of deeds approved	42,814.20
Total appraised valuation of lands included in above number of deeds approved	$456,021.00
Total amount received from sales of above lands	$643,243.95
Average appraised value per acre of above lands	$10.65
Average selling price per acre of the lands embraced in above sales	$15.02
Highest price per acre received in any particular sale (1.564 acres, appraised at $300, sold for $1,250)	$799.24
Lowest price per acre received (80.32 acres, appraised at $400, sold for $405)	$5.05

Under the provisions of the agreement with the Cherokee Nation, contained in the act of July 1, 1902 (32 Stats. L., 716), members of said tribe are not allowed to alienate any of their lands until five years from the date of the issuance of patents. Homesteads can not be sold for twenty-one years, or during the lifetime of the allottee.

The act of April 21, 1904, relative to the removal of restrictions upon alienation, is applicable to the Cherokee Nation, and members thereof may apply for the removal of restrictions upon alienation in the same manner as the members of the Creek Nation.

The agreement with the Choctaw and Chickasaw Nations, contained in the act of July 1, 1902 (32 Stats. L., 641), allows the members of said tribes to sell one-fourth of their land in one year, one-fourth in three years, and two-fourths in five years from the issuance of patent. The homestead, however, can not be sold for twenty-one years, or during the lifetime of the allottee.

Members of the Seminole Nation, under existing laws, will not receive deeds for their allotments until the dissolution of the tribal government on March 4, 1906. The provisions of said act of April 21, 1904, relative to alienation are applicable to the Seminoles.

The United States courts in Indian Territory have decided that

lands allotted to minors can not be alienated or leased except by guardians duly appointed by the United States court, and that sales or leases by the guardian must be authorized by the United States court.

Special effort has been made to prevent the illegal cutting of timber upon land allotted to minors in the Choctaw Nation, also from lands allotted to Mississippi Choctaws prior to proof of residence in good faith, as required by law.

The attention of the Department has been frequently called to the evils arising from the leasing of lands for grazing and agricultural purposes by Indian allottees without any supervision by any of its officers.

On September 21 and October 24 last the Hon. William M. Stewart, chairman of Senate Committee on Indian Affairs, addressed two letters to the Department giving the result of his personal observation concerning the sale and leasing of lands in the Indian Territory.

In his first letter the Senator expressed the opinion that the removal of restrictions under the act of April 21, 1904, "was a mistake," and that the Department should require, by regulation, that the purchaser of land from the allottee must be an actual settler and reside on the land for a period of five years before title should issue to him; also that payment for the land should be made in installments extending through a period of "from ten to twenty years."

The second letter of the Senator relates to the appointment of guardians for minors by the United States courts and suggesting that the Department take steps to have "the proceedings appointing guardians suspended until the meeting of Congress."

Before taking action in the premises it was deemed best to secure the opinion of the Assistant Attorney-General of this Department whether it was competent for it to make rules and regulations to sell Creek lands under sealed bids to actual settlers only, and require the settlement of the purchasers to continue for a period of five years, said payments to be collected by some officer or officers of the Government; also what authority the Department could exercise concerning the appointment of guardians of minor children, and what action it should take relative thereto.

On October 22 the Assistant Attorney-General rendered his opinion, which was approved the same day, in which he held that the Department could make regulations authorizing deferred payments for the land sold if thereby the Indian allottee would be benefited, but he expressed the opinion that it "would be a cumbersome scheme, involving many possibilities of litigation and loss." He further held that the Department is not authorized to require that sales should be made to actual settlers only, or that purchasers must live upon the land for a period of five years, and "that the law does not contemplate any such requirement, and the Department would be going outside the authority

conferred upon it should it attempt to impose and enforce such a regulation."

Concerning the request of the Senator to have the proceedings for the appointment of guardians suspended until the meeting of Congress, the Assistant Attorney-General declares that "this Department has no authority to supervise or control the action of the courts upon which Congress has conferred 'full and complete jurisdiction' in such proceedings."

It is manifest, therefore, that the suggestions relative to requiring that the Creek lands be sold to actual settlers only can not be carried out under existing law. The removal of the restrictions in said act of April 21, 1904, was not made with the recommendation or approval of this Department. Indeed, ever since the passage of the Curtis Act, June 28, 1898, the Department has endeavored to exercise its supervisory authority to the fullest extent in order to protect the Indian from making improvident leases or other disposition of his share in the tribal property.

Rules and regulations were prescribed on October 7, 1898, governing the selection and renting of prospective allotments of the land of the Five Civilized Tribes under said act of June 28, 1898, which required all rental contracts made thereunder to be approved by the Secretary of the Interior. Afterwards, on April 4, 1900, the Assistant Attorney-General for this Department rendered an opinion, which was approved the same day, that there was no law authorizing said regulations.

On May 2, 1900, the Department transmitted to the respective chairmen of the Indian committees of the Senate and House of Representatives the draft of a bill authorizing the Secretary of the Interior to make rules and regulations governing the selection and renting of prospective allotments of agricultural and grazing lands, and which declared that "No rental contracts for such lands shall be valid and binding until approved by the Secretary of the Interior."

Congress was advised that the Department deemed it of "essential importance that any contract made by the individual Indian for the renting of the land claimed by him shall be subject to the supervision and approval of the officers of this Department."

On December 4, 1900, the Department again called the attention of said chairmen to said recommendation, and reiterated the statement that it "deems it of great importance that said legislation be enacted in order that the rights of the Indian may be properly protected."

Subsequently, on December 26, 1900, the Department addressed another letter to each of said chairmen, urging that the bill (S. 5161) granting authority above requested be incorporated as an amendment to the Indian appropriation bill (H. R. 12904), and they were again advised that the Department considered it very important that the

provisions of said bill be enacted in order that proper control may be exercised over the contracts entered into by the wards of the nation under the provisions of sections 16 and 23 of said act of June 28, 1898.

The legislation requested was not enacted.

While it may not be possible to undo the injury already inflicted upon the wards of the nation on account of the lack of authority to carefully supervise their contracts in the leasing of their lands for grazing and agricultural purposes, yet I am fully persuaded that proper legislation should be enacted to protect them in the future. This legislation should include all of the Five Civilized Tribes, and throw around the Indian suitable safeguard against improvident rental contracts in the future.

In my judgment, legislation should also be enacted authorizing the sale of lands by Indian allottees of the Five Civilized Tribes under regulations to be approved by the Secretary of the Interior, such sales to be made only to actual settlers, who should be required to occupy and improve the lands for five years before receiving deeds conveying full title to the lands. Provision should also be made permitting payments, under official supervision, for said lands in five annual payments, and in case of failure to pay any deferred payment, the land should revert to the vendor. I am satisfied that the Indian will receive a larger sum for his land, besides will be greatly benefited by having an actual settler in close proximity to the residue of his land. Such legislation will tend to prevent the accumulation of large tracts of land for speculative purposes only and permit the purchase of the lands by persons desirous of making homes for themselves upon the Indian lands.

It is confidently believed that if the plan above outlined be authorized it will result in the rapid increase of desirable population in the Indian Territory and the earliest and largest attainable development of agricultural and other industrial wealth, which would be subject to such taxation as may be needed to maintain the condition of a Territorial or State government. It should be borne in mind that under existing law all land in the Indian Territory must remain untaxable until the Indian title is extinguished. As yet only the real property in the towns and approximately 43,000 acres in the Creek Nation are subject to taxation. As has already been stated, under present laws, the Cherokee can not sell any part of their lands until five years after they have received patents for their allotments; the Seminole can not sell any part of their lands until after they get their patents, which can only be issued to them after the dissolution of their tribal government in 1906; the Choctaw and Chickasaw can only sell their lands in driblets of one-fourth in one year, one-fourth in three years, and one-half in five years after receiving their patents; the Creek only

may sell their lands when they get their patents, with the approval of the Secretary of the Interior, within five years from the ratification of their agreement, namely, July 26, 1902, and thereafter without such supervision.

About 43,000 acres of these lands have been sold under official supervision, and I am advised by the Indian Agent that all but 15 per cent of these were purchased, not for homes for the purchasers, but for speculation. In all these nations except the Creek Nation that portion of the Indian's allotment reserved for his homestead is inalienable for twenty-one years, or the life of the allottee, during which time it must remain untaxable. Excepting only as to some of the lands in the Creek Nation, for the period stated, all sales of land by Indian allottees in the Indian Territory are without any official supervision whatever.

Thus it is that we have a situation in the Indian Territory which enables the speculator to crowd out the home seeker, leaves the Indian a helpless victim to the cupidity of the unscrupulous, and seriously embarrasses development. The interests of the more than one-half million of people in the Territory, the interests of the Indians, the interests of the hundreds of thousands who are looking to the Territory for homes, and the general welfare alike seem to demand early and appropriate remedial legislation.

The self-emigrant roll of persons entitled to payment from the appropriation made by the act of May 27, 1902 (32 Stat. L., 245), has been completed, and payment is being made to the persons entitled thereto.

The loyal Creek roll has been completed, containing the names of the loyal Creek Indians, or their heirs or legal representatives, entitled to participate in the appropriation made by the act of March 3, 1903 (32 Stat. L., 982), and the payment to the Indians has been nearly completed.

Reference is made to the action taken by the Department concerning the care of insane persons in the Indian Territory, under the provisions of the act of April 28, 1904 (33 Stat. L., 539), which appropriated the sum of $25,000, and required that insane Indians in the Indian Territory should be cared for at the asylum for insane Indians at Canton, Lincoln County, S. Dak.

During the past fiscal year nine towns in the Choctaw and Chickasaw nations have been authorized to issue bonds for waterworks and schoolhouses, with the limitation as required by the act of May 19, 1902 (32 Stat. L. 200), viz:

> Bonds not to exceed an amount the interest on which, at 5 per cent per annum, would be liquidated by a tax of 5 mills upon the dollar of the valuation of the taxable property in such city or town, to be ascertained by the last assessment for the purpose of taxation.

The inspector renews his previous recommendation that legislation be enacted relative to the laying out of public roads along section lines and elsewhere in the Choctaw, Chickasaw, and Seminole nations, and that additional appropriation be made for public schools in the Indian Territory, and also that appropiate legislation be enacted for the conduct and control of private banks in the Indian Territory.

Some provisions of the Indian appropriation act of April 21, 1904, deserve special notice. It authorizes the Secretary to make rules and regulations for the public sale of about 500,000 acres of the residue of Creek lands, after allotment of 160 acres to each member of the tribe, in tracts not exceeding 160 acres to any one purchaser, and the same paragraph contains the legislation concerning the removal of restrictions upon alienation above referred to.

The suit of the Delaware Indians *v.* the Cherokee Nation was decided by the Supreme Court on February 23, 1904, adversely to the Delawares (192 U. S., 127).

A question having arisen as to the regularity of selections for allotment prior to the rendition of final judgment deciding the rights of the Delawares, it was declared in said act that no proceedings relative to allotments in the Cherokee Nation should be held invalid for want of authority to begin allotment in said nation, except that said provision should not apply to filings made on land segregated for the Delaware Indians. It was further provided that the Delawares should have the right to select allotments upon which they had improvements at the date of said act, and should also be allowed to sell their improvements upon their surplus lands within six months to other citizens of the Cherokee Nation entitled to select allotments, at a valuation to be approved by an official designated by the President for that purpose. The Indian agent for the Union Agency was designated, and regulations have been issued carrying out said provision.

The special agents, Messrs. Bonaparte and Woodruff, whose appointment to investigate abuses in the public service in the Indian Territory was mentioned in my last annual report, submitted their report on February 25, 1904, and on March 7, following, the President transmitted the same to Congress. The report was printed and is contained in Senate Document No. 189 (58th Cong., 2d Sess.). Afterwards, on April 21, 1904, appropriation was made for salaries and expenses of the Dawes Commission and other offices in the Indian Territory, with the declaration that the Commission shall conclude its work and cease to exist on July 1, 1905, and also that the surveys and appraisement of town sites, under the act of June 28, 1898, shall be completed during the fiscal year ending June 30, 1905.

It is also provided "that no portion of the money herein appropriated for the Indian Territory shall be paid to any person in the serv-

ice of the United States until such person shall make oath that he has no financial interest with any person or corporation dealing in Indian lands in the Indian Territory."

The provision was construed by the Assistant Attorney-General for this Department on July 30 last, which was duly approved, to apply to every disbursement in the Indian Territory payable for any appropriation made by the act, including the Commission to the Five Civilized Tribes, their clerks and agents, the United States Indian agent, his clerks and employees, and the Indian inspector in charge of the Indian Territory. The following oath, recommended by the Assistant Attorney-General, was approved by the Department:

I, ——— ———, do solemnly swear that I have not since and including the first day of July, 1904, had, and do not now have, directly or indirectly, in my own name or otherwise, through any agency, trust, confidence, assignment, or other concealment, or yet as agent, trustee, or adviser for another, any interest, fixed or contingent, in the principal, profit, or result of any investment, or by way of commission, percentage, or fee thereon, of or with any person or corporation dealing in Indian lands in the Indian Territory, or in leases thereof or loans thereon; nor during any part of said time have I been or am I directly or indirectly owner of or anywise interested in the stock of any such corporation; nor am I nor have I been an officer, agent, solicitor, counsel, adviser, or employee of any corporation, association, firm, partnership, or person engaged in, interested in, or doing any such business in the Indian Territory.

Appropriate action has been taken for the payment to the intruders in the Cherokee Nation, and also for the payment to the Delaware Indians of the sum of $150,000 appropriated by said act of April 21, 1904, but the last proceedings of the Delaware council directing the manner of said payment, and the written statement to be approved by the President, as required by said act, have only recently been received by the Department, and appropriate action will be taken thereon.

SULPHUR SPRINGS RESERVATION.

In my last annual report, pages 47–49, is set forth the action taken by the Department relative to the segregation and payment for land and improvements thereon for the Sulphur Springs Reservation in the Chickasaw Nation, Ind. T., also the action looking to the acquisition of an additional contiguous tract in order to preserve the waters of the springs from contamination. Upon the recommendation of the Department provision was made by section 18 of said act of April 21, 1904, for the payment at $60 per acre for said tract, "containing 78.68 acres, more or less," and all the improvements upon said tract at the date of the passage of the act were to be appraised and paid for in the same manner as in the original act authorizing said reservation. Payment for the additional tract to the nations was

made by the Secretary of the Treasury upon the request of the Department on May 16, 1904, amounting to $13,000.80.

A further provision required the appraisement "at their actual value at the time of such appraisement" of all town lots held by citizens of the United States within the limits of the original tract, payment therefor to be made by warrants drawn by the Secretary of the Interior upon the Treasury of the United States, and an appropriation necessary to pay said amount was made by said act. It was further required that the appraisal of said lots should be completed within three months of the passage of the act. The appraisal of the improvements and lots has been made by an inspector, whose report has recently been received, and action will be taken thereon as soon as practicable and payments made to parties entitled thereto.

A superintendent was appointed under the first proviso to said section 18, and regulations were issued respecting the care of said reservation and the preservation of the improvements thereon. The report of said superintendent, dated November 5, gives in detail the action taken by him during the past fiscal year. He recommends the removal of undesirable structures, clearing from the reservation dead trees, garbage, and refuse, construction of a reservoir with a capacity of not less than 1,000,000 gallons of water, inclosing the springs with masonry, the regulation of the water supply taken from the medicinal springs, the assignment of a hydrographer to determine the actual flow of the several springs, also an analyst to make an analysis of the waters, the appointment of an additional clerk and stenographer, also one additional patrolman and forester, and an appropriation of $25,000 to carry into effect said recommendations, to be immediately available.

Legislation has heretofore been recommended and bills are now pending in Congress containing provisions deemed absolutely necessary to the completion of the work now required by law in order to wind up the affairs of the Five Civilized Tribes, and recommendations for additional legislation which may be found to be necessary will be hereafter submitted to Congress.

The magnitude and difficulty attending the work of the Dawes Commission and the other Government officials in the Indian Territory can hardly be exaggerated. The Indian agent alone during the last fiscal year received and disbursed $1,686,124.05 of the funds belonging to the several tribes, although every obstacle possible was interposed by noncitizens to the collection of the tribal taxes, and their opposition only ceased when the Supreme Court decided, in the case of Morris *v.* Hitchcock (194 U. S., 384), that the tribal legislation imposing said taxes was lawful and constitutional.

It is a source of great satisfaction that the work is so near comple-

tion, and that the rights of the several tribes and the individual members, as well as other interested parties, have been carefully maintained.

AGREEMENTS WITH INDIANS.

Reference was made in my last annual report to several agreements with various Indian tribes, which were then awaiting ratification by Congress.

Five of the agreements referred to were ratified by Congress at its last session, viz, Crow, Devils Lake, Grande Ronde, Rosebud, and Turtle Mountain, and three are still unratified, viz, Yankton Sioux, Lower Brulé, and Fort Berthold.

An agreement with the Indians of the Red Lake Reservation, in Minnesota, concluded March 10, 1902, was also ratified by act of February 20, 1904 (33 Stat. L., 46).

By the agreements thus ratified nearly 11,000,000 acres of land have been ceded by the various tribes to the Government, to be disposed of under the laws governing the various classifications of lands.

The consideration agreed to be paid the Indians for the lands relinquished by these agreements somewhat exceeds $4,500,000, but the acts ratifying the said agreements all contain a proviso (save in the case of the Turtle Mountains) that the United States is not bound in any manner to purchase any portion of the lands ceded or to find purchasers therefor, it being the intention that the United States shall act as trustee for the Indians in the disposal of the lands, the proceeds thereof to be deposited in the Treasury to their credit, to be paid them in such manner and at such time as specifically provided in the respective acts.

In the act ratifying the Turtle Mountain agreement, an appropriation is made (conditioned upon the acceptance by the Indians of certain amendments to the original agreement) of a lump sum of $1,000,000 in payment for the land relinquished, out of which sum $50,000 is to be used to pay the claims of certain attorneys who have rendered legal services to the Indians.

An agreement was concluded with the Indians belonging to the Shoshone or Wind River Reservation, in Wyoming, under date of April 21, 1904, but was not received by the Department in time to be submitted to Congress at its last session.

By this agreement a body of land, approximating 1,480,000 acres, is relinquished by the Indians, and the United States agrees to dispose of the same under the provisions of the homestead, town site, coal, and mineral land laws, the proceeds to be paid to the Indians or expended for their benefit in the manner provided therein. This agreement will be submitted for the action of Congress during the coming session.

PENSIONS.

The report of the Commissioner of Pensions shows that during the fiscal year ended June 30, 1904, the total number of pensioners on the roll was 1,043,919, and the number remaining on the roll at the end of the year was 994,762, a net loss of 1,783 from the previous year.

The gains to the roll during the year were 44,246 new pensioners and 3,128 restorations and renewals, a total of 47,374; of this number 326 were pensioned by special acts of Congress. The losses to the roll during the same time by death were 43,820, and from other causes 5,337, a total of 49,157, a net loss for the year of 1,783. The number of deaths of soldier pensioners for the year was 31,728, and of this number 30,071 were volunteers of the civil war. The pension roll at the close of the year contained the names of 720,315 soldiers, 273,841 widows and dependents, and 606 army nurses.

The pensioners on the roll June 30, 1904, are classified as follows, viz:

War, Revolutionary:	
Widows	1
Daughters	2
War of 1812:	
Survivors	1
Widows	918
Indian wars:	
Survivors	2,367
Widows	3,519
War with Mexico:	
Survivors	5,214
Widows	7,821

Service after March 4, 1861.

Civil war:	
General laws—	
Army invalids	238,555
Army widows	84,218
Navy invalids	2,230
Navy widows	1,153
Army nurses	606
Act of June 27, 1890—	
Army invalids	433,552
Army widows	161,383
Navy invalids	16,455
Navy widows	7,206
War with Spain:	
Army invalids	11,946
Army widows	4,187
Navy invalids	494
Navy widows	202

Regular establishment:	
Army invalids	7,816
Army widows	2,137
Navy invalids	1,685
Navy widows	1,094
Total	994,762

The cases reported above under the head of "Regular establishment" embrace those in which the disability originated in service in the Army or Navy between the close of the civil war and the commencement of the war with Spain and since the close of the war with Spain and the insurrection in the Philippine Islands.

In the reports prior to the fiscal year 1903 the cases classified as "Regular establishment" were included under the head of "Civil war" cases; as a result of the classification of the last two years the exact number of "civil war" pensioners is now shown.

The Commissioner estimates that the death rate among the pensioners for the present fiscal year will be about 47,000 and the losses to the pension roll from other causes will be about 5,000.

The "high-water mark" of pensions as to numbers was reached in July, 1902, when there were 1,001,494 pensioners on the roll; under the operation of existing laws it is not at all likely that these figures will be reached again.

Two hundred seventy-nine thousand two hundred and eight (279,208) claims of all classes were adjudicated during the year; 171,094 by allowance and 108,114 by rejection. Included in this number of allowances are 8,725 claims in which no benefit accrued to the claimants for the reason that they were then pensioned under another law at an equal or higher rate. Certificates are not issued in this class of cases unless claimants elect to take the pension in lieu of that which they now receive. Of the claims rejected, 83,691 were denied on medical grounds, and most of them were applications for increase in which the examining surgeons found no increase of disability since the last adjudication.

A very small proportion of the above were original claims. Only 24,423 cases were rejected on legal grounds. In these cases it was found that either there was no legal title to pension or that the claimants were unable to furnish the evidence to establish their claims. Many of these claims were filed by persons already in receipt of pensions under the act of 1890, and who were trying to obtain a higher rate of pension under the general law. Upon their failure to establish their right under said law, and when they had declared their inability to furnish further evidence, a formal rejection was entered up, in order that the case might be taken out of the pending files. Many of the rejections were accompanied by an allowance of a pension to the same person under another law.

The number of allowances in which certificates actually issued during the year was 151,211. Of these, 44,296 were original claims, 5,059 were restorations and renewals, 84,870 were increases, reissues, additionals, and supplementals, and 16,986 were for accrued pension.

The number of claims pending July 1, 1903, was 304,809, and there were filed during the year 254,333 new applications of all kinds. At the close of the year only 285,523 were pending, 107,099 being original claims in which no allowance has ever been made, but are now in process of adjudication. As many claimants have two claims pending under different laws, the number of actual claimants is considerably less than the number of pending claims.

The total number of male pensioners at the close of the year was 720,315; 262,726 on account of disability of service origin; 450,007 on account of disability whether due to service or not, and 7,582 old war survivors. The total number of female pensioners was 274,447; 92,991 by reason of death of the soldier from causes due to service; 168,589 on account of service of soldier; 12,261 on account of service of soldier in old wars prior to March 4, 1861, and 606 army nurses. A detailed statement of these classes is appended hereto, page 307, Exhibit D.

The appropriation for the payment of pensions for the fiscal year was $142,500,000; repayments to the appropriation made the amount available for payment of pensions $142,503,897.86. The disbursements for army and navy pensions during the year, including the amount disbursed by Treasury settlements, were $141,093,571.49, leaving an unexpended balance to be covered into the Treasury of $1,410,326.37.

Of the above amount $1,500,000 was asked for, and appropriated by Congress, to meet the increased expenditure brought about by the operations of Order No. 78, known as the "age" order, but owing to the small proportionate number of applications for increase and the small amount involved in each increase, averaging less than $3 per month, less than $90,000 of said appropriation was required for the purposes stated, the unused balance forming a portion of the unexpended balance which was returned to the Treasury at the close of the fiscal year. The expenditure for navy pensions was $4,082,954.56.

The amount expended during the year for salaries and other expenses of the Pension Bureau, and the cost of disbursements, fees of examining surgeons, etc., was $3,849,366.25, making the total cost of maintenance of system $144,942,937.74.

The disbursements for pensions from July 1, 1790, to June 30, 1865, were $96,445,444.23. Since 1865 the disbursements for pensions were $3,083,271,717.42, and for cost of maintenance and expenses $99,497,300.96, or a total of $3,182,769,018.38, making the entire cost of the maintenance of the pension system since the foundation of the Government $3,279,214,462.61. This is exclusive of the cost of the estab-

lishment of the various soldiers' homes and of bounty land warrants granted, amounting to nearly 69,000,000 acres.

Of the amount that has been expended for pensions since the foundation of the Government, $70,000,000 was on account of the war of the Revolution, $45,326,774.16 on account of service in the war of 1812, $6,980,896.93 on account of service in the Indian war, $35,162,130.35 on account of service in the Mexican war, $8,586,200.09 on account of the war with Spain, $2,287,924.99 on account of the Regular establishment, and $3,011,373,235.13 on account of the war of the rebellion.

The cost of the pension system reached its maximum in 1893, when it amounted to $2.44 per capita of the entire population. It, however, has been growing less each year, and in 1904 the total cost of pensions amounted to only $1.77 per capita of population.

In 1893 the cost of the pension system per $1,000 of the aggregate wealth of the United States was $2.24, while in 1904 it had decreased to less than $1.32. The Commissioner expresses the opinion that in ten years the pension system will cease to be noticed as a burden to the people of the United States.

The annual value of the pension roll, the amount required to pay the regular pension certificates (994,762) outstanding at the close of the fiscal year, was $134,130,203. The average annual value of each pension was $134.84, an increase of $1.35 over that of the former year. The average annual value of general-law pensions has increased from $176.16 to $180.58; of pensions under the act of June 27, 1890, from $108.82 to $110.69, while the average annual value of Spanish war pensions has decreased from $137.25 to $132.18. The average annual value of pensions of the Regular establishment is $173.09. Over one-half of the pensions are $10 per month and under, and the average monthly value of all pensions is $11.24.

In 128,623 cases allowed there were first payments averaging $80.82 each, amounting to $10,396,375. In 1,045 cases allowed the first payments averaged $1,444.83 each, amounting to $1,509,851.

There are 4,910 pensioners residing in foreign countries, to whom are paid in pensions the sum of $722,440.69.

Since 1861 there have been granted by special acts of Congress 12,207 pensions and increase of pensions.

The number of special acts granting pensions and increase of pensions passed during the second session of the Fifty-Eighth Congress was 1,854 and caused an increase in the annual expenditure of $274,576.

The number of attorneys on the roll June 30, 1904, was 22,248, and the amount paid as attorneys' fees during the year was $692,295. These fees are paid to attorneys direct by the United States upon the allowance of the pension claim, attorneys being prohibited by law from collecting fees from claimants.

Four thousand three hundred and eighty-eight (4,388) examining

surgeons are employed to make medical examinations of claimants for pension and increase of pension, and the amount appropriated for their payment during the year was $800,000, of which $588,482 had been expended during the first nine months of the fiscal year. A majority of the surgeons are organized into boards of three members, while 188 designated specialists are distributed throughout the United States.

During the year four of the eighteen pension agencies occupied leased quarters at a total annual rental of $10,600. All these agencies are operated by an aggregate force of 433 employees, the cost of maintenance of such agencies for the fiscal year being $533,556.87.

In 1904 there were 10,973 pensioners under guardianship. Owing to the large number of guardians and the labor and expense involved in scrutinizing and passing upon their accounts, it has been necessary to change the former rule requiring guardians to make detailed reports of the items of expenditure concerning the estates of their wards. Hereafter guardianship accounts will not be required to be filed in the Office, but, at the option of the Commissioner, guardians will be required to file a certificate from the judge of the court appointing the guardian showing that he is still duly qualified and acting and has given and maintained satisfactory bonds, submitted proper reports, and has complied with the laws of the State in which he resides.

During the year 212 indictments were found and 178 convictions secured on account of violations of the pension laws, there were 8 acquittals, 23 cases were dismissed, 7 civil suits were instituted, and $5,483 recovered. The report shows that of the persons convicted only 20 are believed to have had any military service.

During the year 254,333 new applications of all classes were filed in the Office, 268,050 cases were adjudicated, and 285,523 pending claims remained on hand at the close of the year.

It is a part of the duty of the Pension Office to issue military bounty-land warrants under the laws governing the same. Several acts of Congress granting land as bounty for military service have been passed, but they are all obsolete except three—act of February 11, 1847; act of September 28, 1850, and act of March 3, 1855. The acts of 1847 and 1850 are practically obsolete now, only six issues having been made thereunder in five years. The act of 1855 provides that officers and enlisted men, and, under certain conditions, non-enlisted persons who served fourteen days or were engaged in battle in any war between 1790 and March 3, 1855, are entitled to 160 acres. When a warrant for less than 160 acres issues under any prior act, an additional warrant may issue for such quantity of land as will make in the whole 160 acres.

The Commissioner reports that during the last five years 125 warrants were issued granting 18,560 acres of land. During the last year

67 warrants were issued granting 10,040 acres, all except three being under the act of 1855.

The report gives an epitome of bounty-land history and sums up the number of warrants issued and the number of acres granted, as follows:

	Warrants.	Acres.
Revolutionary war[a]	16,663	2,666,080
War of 1812[a]	29,471	4,891,520
Act of 1847	88,271	13,213,160
Act of 1850	189,144	13,168,320
Act of 1852[a]	11,992	694,400
Act of 1855	263,030	34,137,290
Total	598,571	68,770,770

[a] Now obsolete.

Under the act of June 27, 1890, as amended by the act of May 9, 1900, old age has been pronounced an infirmity, and has for many years been considered as a factor in the rating of disabilities. In order that the practice in this regard should be made certain and definite and in accord with the experience of the office, the Commissioner, with my approval, on March 15, 1904, issued Order No. 78, a copy of which is as follows:

Whereas the act of June 27, 1890, as amended, provides that a claimant shall "be entitled to receive a pension not exceeding twelve dollars per month and not less than six dollars per month proportioned to the degree of inability to earn a support, *and in determining such inability each and every infirmity shall be duly considered*, and the aggregate of the disabilities shown to be rated;" and

Whereas old age is an infirmity the average nature and extent of which the experience of the Pension Bureau has established with reasonable certainty; and

Whereas by act of Congress in 1887, when thirty-nine years had elapsed after the Mexican war, all soldiers of said war who were over 62 years of age were placed on the pension roll; and

Whereas thirty-nine years will have elapsed on April 13, 1904, since the civil war and there are many survivors over 62 years of age: *Now, therefore—*

Ordered (1) In the adjudication of pension claims under said act of June 27, 1890, as amended, it shall be taken and considered as an evidential fact, if the contrary does not appear, and if all other legal requirements are properly met, that, when a claimant has passed the age of 62 years he is disabled one-half in ability to perform manual labor and is entitled to be rated at six dollars per month; after 65 years at eight dollars per month; after 68 years at ten dollars per month, and after 70 years at twelve dollars per month.

(2) Allowances at higher rate, not exceeding twelve dollars per month, will continue to be made as heretofore, where disabilities other than age show a condition of inability to perform manual labor.

(3) This order shall take effect April 13, 1904, and shall not be deemed retroactive. The former rules of the office fixing the minimum and maximum at 65 and 75 years, respectively, are hereby modified as above.

This order has been much discussed, and while generally commended, has in certain quarters been the subject of criticism as being in effect an assumption of legislative power by the Executive not warranted by the terms of the act of June 27, 1890, and amendments thereto. All the matters thus suggested were fully and carefully considered in a most conservative way, and with full cognizance of the fact that it was the duty of the Executive to administer and not to make law.

The results have fully vindicated the wisdom of its adoption not only from the standpoint of economical administration, but also from that of most effectively meeting and carrying out the purpose and intent of the law-making power. It simply recognized more specifically a rule of evidence that had obtained ever since the passage of the act of 1890, viz, that in determining the degree of disability under that act, age was a factor which became more and more potent as the soldier advanced in years. It was justified by precedent to be found in Order No. 241, of September 2, 1893, promulgated only a little more than three years after the passage of the act of 1890, directing that the attainment of the age of 75 years should of itself, as a rule, be regarded as entitling to a maximum rate of $12 per month; again, in the action of July, 1897, when in a given case (that of Francis Frank) it was held that "a claimant for pension under the act of June 27, 1890, who has attained the age of 65 years, shall be entitled to at least the minimum rate of pension provided by that act."

More than this, it was justified by the experience and observation of those who were daily, monthly, and yearly directly engaged in administering the law as the numerous cases came up for consideration and adjudication. Above and beyond all this, Congress made a large additional appropriation to carry out the provisions of the law as construed by said Order No. 78, thus placing upon the order the seal of its approval.

It only remained for the Department to carry out the intent of Congress by so administering the law that the money thus appropriated, or as much thereof as would be needed, should come into the hands of those for whom by law it was intended. As bearing on this subject there is hereto appended page 308, Exhibit E, a report made by the Secretary of the Interior under date of March 28, 1904, in response to a Senate resolution of March 18, 1904, calling for information in relation to the administration of the act of June 27, 1890.

There were filed from the date of issuance of the order up to July 1, 1904, 18,303 claims for original pension and 28,806 claims for increase, a total of 47,109. There were allowed during the same period 3,859 original claims and 14,768 increase claims, a total of 18,627, under the provisions of said order.

Of the 375,000 invalid pensioners receiving less than $12 per month, less than 8 per cent had applied for increase under the order up to July

1, 1904, indicating that most of them are already receiving their age pension.

The Commissioner estimates the number of civil-war soldiers under 62 years of age at about 30 per cent of the survivors; about 20 per cent more under 65; about 20 per cent more under 68, and the balance about 30 per cent, 68 and over.

The report shows that while the number of pensioners decreased in the total sum of 1,783 during the year, there was a gain in all of the Southern States, while in New York, New Jersey, Maryland, West Virginia, Indiana, Illinois, and Wisconsin there was a net loss of pensioners of 2,935. The Commissioner states that there is no explanation of the foregoing facts, except that pension claims in the office are adjudicated in their order and without reference to the location of the claimant.

A statement accompanies the report showing that 3,304,995 soldiers and sailors rendered service in the several wars in which this country has been engaged, and that the average pension that has been paid out on account of each enlistment is $962. The above number does not include a great number of civilians who rendered service in temporary local organizations against Indians without making any claims for such services.

Two pensioners of the Revolutionary war died during the year, leaving three pensioners of that war on the roll—one widow and two daughters. Only one survivor of the war of 1812 remains on the roll.

The total number of the employees in the office are 1,691. Of this number 462 are ex-soldiers; the number of males being 1,328 and females 363.

Substantial progress has been made in bringing up the arrears of work in the office, and in results obtained the year of 1904 exceeded any year since 1894. The report gives a summary of the work for the past eight years, which shows that on June 30, 1897, the number of cases on hand was 578,099, and on June 30, 1904, the number was 285,523. The number of claims adjudicated in 1897 was 168,648, while for the year 1904 the number was 268,050, an increase of 59 per cent, nothwithstanding that the number of employees was over one hundred less in 1904 than in 1897. Results demonstrate a constantly improving state of efficiency in the public service.

In this connection the Commissioner calls attention to the fact that there are 513 employees in the office who are 60 years of age and over; the average age of all the employees being 50 years and 2 months, and the average age of the civil war soldier employees, 64 years and 2 months. He recommends that Congress make provision for these superannuated clerks.

In my last annual report I adverted to this matter and I now desire to renew the recommendation then made that appropriate legislation be enacted by Congress for the retirement from duty of such aged employees.

The Commissioner again recommends the passage of a law providing that any man who is convicted in a court of an infamous crime should forfeit his pension or his right to one. The pension roll being a roll of honor, its high standard should be maintained, and I therefore concur in the Commissioner's recommendation.

The Commissioner renews his former recommendation for the enactment of a law by Congress prohibiting the giving of pensions to those women who marry soldiers after the soldiers become old pensioners. I concur in his views in the premises.

The act of August 7, 1882, provides that marriages shall be proven in pension cases to be legal marriages according to the law of the place where the parties resided at the time of marriage or at the time when the right of pension accrued.

The effect of this law has been to deny claimants in many instances the status of legal widowhood, although the equities appear to be in favor of such claimants. I desire to reiterate the recommendation contained in previous reports, that Congress so amend the act as to provide for the admission of evidence to prove marriages for pensionable purposes by a standard which will be uniform throughout the entire jurisdiction of the United States.

The present system of examining applicants for pension, the Commissioner again states, is a most uncertain, expensive, and unsatisfactory method, the system being liable to outside control and political dictation, and generating an enormous amount of political friction. He renews his former recommendation that a different method of examining applicants for pension be adopted. In discussing this matter in my last annual report I stated among other things:

> Those who are to be examined for disabilities should appear before persons possessed of the highest degree of medical knowledge and skill, as pathological sequences of many diseases and disabilities are so obscure and remote that they can only be detected by careful examination conducted by physicians of learning and experience, and frequently of those having special facilities for microscopical examination of excretions, etc. As a substitute for the existing system, he again suggests a division of the country into districts or circuits, the appointment under civil-service rules of medical experts, to be organized into boards to serve outside of the States of their domiciles and to go from place to place within their respective circuits on fixed days, making examinations and taking testimony regarding the condition of the applicants for pension.
>
> The Commissioner further suggests that he be granted authority to select 500 convenient and accessible places, at each of which he shall designate a local surgeon, who, in connection with the traveling board of that district, shall constitute the local board of United States examining surgeons, which shall examine all persons duly authorized by him. In cases of emergency the local surgeon may be designated to

make the examination. The traveling surgeons shall be expected to devote all their time to the service, and shall engage in no other gainful work or occupation while members of such boards; the Commissioner to have power to discharge at will any surgeon so appointed or reduce the number of such boards and to fill all vacancies caused by death, resignation, or discharge. The system as outlined by the Commissioner is in the interest of the betterment of the service and has my emphatic approval.

The Commissioner recommends the amendment of the act of March 3, 1899, by striking out the word "resident" at the beginning of the first proviso, for the reason that as the proviso now stands a pensioner living abroad has a great advantage over a pensioner residing in this country.

Under the act of March 3, 1901, amending section 4708, Revised Statutes of the United States, act of February 28, 1903, amending the act of March 3, 1901, section 4711, Revised Statutes, and the act of January 25, 1879, act of March 19, 1886, and act of August 5, 1892, attorneys are not permitted to charge claimants for services rendered therein. The Commissioner expresses the opinion that claimants should have the right to the services of attorneys at reasonable fees, as well as for their own benefit as the saving of expense to the Government in performing work which the attorneys might otherwise do, and recommends the enactment of a law allowing a small fee for the services of attorneys under each of said acts. I commend the Commissioner's views in this matter to favorable consideration.

In previous annual reports the desirability of the enactment by Congress of a law providing for the payment of a specific fee to attorneys in claims under the act of March 3, 1899 (30 Stat. L., 1379) for division of pension, as well as in claims for accrued pension, was adverted to.

* * * * * * *

Further experience in the administration of the pension laws during the past year has demonstrated the necessity for the enactment of the remedial legislation desired, and I accordingly renew my recommendation in the premises.

I desire to again call attention to the advisability of the early enactment of legislation providing for an authoritative judicial determination of the pension laws. This subject was fully discussed in my last annual report.

* * * * * * *

It is my purpose to again bring this very important matter to the attention of Congress and to urge favorable consideration of a bill similar in character to that above mentioned, copy of which is hereto appended page 312, Exhibit F.

In my last annual report I directed attention to the fact that there were on file in this Department a large number of papers appertaining to the wars subsequent to that of 1812, and prior to the civil war,

which, in my judgment, should be transferred to the custody of the Secretary of War, to be filed in connection with those transferred to the War Department under the acts of July 27, 1892 (27 Stat. L., 235), and August 18, 1894 (28 Stat. L., 403), and recommended the enactment of legislation by Congress to that end.

Accordingly a joint resolution providing for the transfer of certain military rolls and records from the Interior and other Departments to the War Department was approved April 28, 1904, in terms as follows:

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the military rolls and records of the Indian wars, or any other wars prior to the civil war, now preserved in the Interior or other Department, be transferred to the War Department, to be preserved in the Record and Pension Office of that Department, and that they shall be properly indexed and arranged for use.

Subsequently, on the 11th and 13th of May, 1904, respectively, there were transferred to the Secretary of War, pursuant to this joint resolution, the military rolls and records of Indian and other wars occurring prior to 1861, which were on file in this Department.

The disbursements for pensions by the United States from July 1, 1790, to June 30, 1865, were $96,445,444.23; the total cost of pensions and expenses connected with the administration of the pension laws from the latter date to the present time, with the number of pensioners, is shown in the following table:

Year.	Paid as pensions.	Cost, maintenance, and expenses.	Total.	Number of pensioners.
1866	$15,450,549.88	$407,165.00	$15,857,714.88	126,722
1867	20,784,789.69	490,977.35	21,275,767.04	155,474
1868	23,101,509.36	553,020.34	23,654,529.70	169,643
1869	28,513,247.27	564,526.81	29,077,774.08	187,963
1870	29,351,488.78	600,997.86	29,952,486.64	198,686
1871	28,518,792.62	863,079.00	29,381,871.62	207,495
1872	29,752,746.81	951,253.00	30,703,999.81	232,229
1873	26,982,063.89	1,003,200.64	27,985,264.53	238,411
1874	30,206,778.99	966,794.13	31,173,573.12	236,241
1875	29,270,404.76	982,695.35	30,253,100.11	234,821
1876	27,936,209.53	1,015,078.81	28,951,288.34	232,137
1877	28,182,821.72	1,034,459.33	29,217,281.05	232,104
1878	26,786,009.44	1,032,500.09	27,818,509.53	223,998
1879	33,664,428.92	837,734.14	34,502,163.06	242,755
1880	56,689,229.08	935,027.28	57,624,256.36	250,802
1881	50,583,405.35	1,072,059.64	51,655,464.99	268,830
1882	54,313,172.05	1,466,236.01	55,779,408.06	285,697
1883	60,427,573.81	2,591,648.29	63,019,222.10	303,658
1884	57,912,387.47	2,835,181.00	60,747,568.47	322,756
1885	65,171,937.12	3,392,576.34	68,564,513.46	345,125
1886	64,091,142.90	3,245,016.61	67,336,159.51	365,783
1887	73,752,997.08	3,753,400.91	77,506,397.99	406,007
1888	78,950,501.67	3,515,057.27	82,465,558.94	452,557
1889	88,842,720.58	3,466,968.40	92,309,688.98	489,725
1890	106,093,850.39	3,526,382.13	109,620,232.52	537,944

Year.	Paid as pensions.	Cost, maintenance, and expenses.	Total.	Number of pensioners.
1891	$117,312,690.50	$4,700,636.44	$122,013,326.94	676,160
1892	139,394,147.11	4,898,665.80	144,292,812.91	876,068
1893	156,906,637.94	4,867,734.42	161,774,372.36	966,012
1894	139,986,726.17	3,963,976.31	143,950,702.48	969,544
1895	139,812,294.30	4,338,020.21	144,150,314.51	970,524
1896	138,220,704.46	3,991,375.61	142,212,080.07	970,678
1897	139,949,717.35	3,987,783.07	143,937,500.42	976,014
1898	144,651,879.80	4,114,091.46	148,765,971.26	993,714
1899	138,355,052.95	4,147,517.73	142,502,570.68	991,519
1900	138,462,130.65	3,841,706.74	142,303,837.39	993,529
1901	138,531,483.84	3,868,795.44	142,400,279.28	997,735
1902	137,504,267.99	3,831,378.96	141,335,646.95	999,446
1903	137,759,653.71	3,993,216.79	141,752,870.50	996,545
1904	141,093,571.49	3,849,366.25	144,942,937.74	994,762
Total	3,083,271,717.42	99,497,300.96	3,182,769,018.38	

PENSION APPEALS.

The report of the Assistant Secretary shows that at the commencement of the fiscal year, July 1, 1903, there were pending 11,795 appeals and motions for reconsideration.

There were filed during the year ending June 30, 1904, 9,715 appeals and motions, and there were finally disposed of 10,496 cases, leaving at the close of the year 11,014 pending appeals and motions for reconsideration.

It follows that at the end of the year there had been a reduction of pending appeals and motions of 761.

During the year there have been filed an average of 809 appeals and motions each month, and during the same period the average number finally disposed of each month was 874.

There were dismissed 603 appeals, for the reason, in most cases, that the Commissioner of Pensions, when forwarding his report on the appeals, receded from his former adverse action and proposed to allow the contentions of appellants upon dismissals of the appeals. This action was taken in the interests of claimants, as it permitted a more prompt allowance without delaying the consideration of the appeals in the regular order of filing.

One hundred and eighty cases not included in the foregoing were returned to the Pension Office for further action and report. This was found necessary for the reason that upon careful investigation it appeared that additional evidence bearing upon the question at issue had been filed which had not been considered by the Office, or, for various reasons, the claim had been improperly adjudicated.

Deducting the dismissals and the cancelations, final decisions were rendered in 9,853 cases, of which 1,713 were reversals, or a fraction over 17 per cent.

Volume 14 of Departmental Decisions in appealed pension and bounty-land claims has been completed and is ready for distribution. It contains 598 pages and embraces important decisions of a legal and medical character for future reference and guidance.

PATENT OFFICE.

The report of the Commissioner of Patents on the business of the Patent Office for the fiscal year ended June 30, 1904, shows that there were received during that year 50,321 applications for letters patent, 823 applications for designs, 142 applications for reissues, 1,746 caveats, 2,554 applications for trade-marks, 1,297 applications for labels, and 331 applications for prints. There were 31,979 patents granted, including reissues and designs, and 2,213 trade-marks, 1,044 labels, and 257 prints were registered. The number of patents that expired was 20,966.

The number of allowed applications which were, by operation of law, forfeited for nonpayment of the final fees, was 5,499. The total receipts of the office were $1,663,879.99, the total expenditures were $1,469,124.40, and the surplus of receipts over expenditures, being the amount turned into the Treasury, was $194,755.59. The Commissioner's report shows that the business of the Patent Office is growing rapidly, the increase from 1899 to 1904 having been about 35.5 per cent, while the number of employees during the same period was increased only 8 per cent.

The Commissioner states that in his opinion the increased work could not have been successfully performed by the use of the methods of work employed at the beginning of the period under consideration, nor with the standards of efficiency at that time found in the office. The methods of work have been quietly, steadily, and in many ways changed, to the great improvement of the service, and standards of individual work have been raised to meet the increasing volume of work. By the rearrangement of the copies of printed patents, together with judicious expenditure of the appropriation devoted to the reproduction of exhausted copies, many of the active classes have been filled in, so that all orders received are now rapidly filled. The class of errors formerly known as office errors in the photolithographic work, and formerly productive of expense to the office, has been eliminated.

The correspondence of the office, amounting to 227,750 letters, exclusive of letters filed in caveats and applications for patents, has rarely been more than two days in arrears. Orders for manuscript

copies of records are currently filled at a rate of speed formerly reserved for orders made "special". Only ten complaints of losses of office fees, aggregating $2.30, alleged to have been sent by mail, have been received, out of a total number of 19,550 pieces received by ordinary mail and express, transmitting $10,293.29.

The Commissioner calls attention to the fact that the increase of work of the Patent Office requires more space than that at present occupied by this Bureau, and that some economy of time and work could be accomplished if the space allotted to this office could be increased.

THE GEOLOGICAL SURVEY.

In accordance with custom, a plan for the work of the Geological Survey during the fiscal year 1903–4 was approved by me on June 3, 1903. The main branches of the work—geologic, topographic, hydrographic, chemical, and physical, mining and mineral resources—were established many years ago, and have had a gradual and gratifying development. Details relating to this development and to the results the Survey has achieved may be found in its Bulletin No. 227, published last spring, on the occasion of its quarter-century anniversary.

The Director of the Survey reports that during the last year there was marked activity on the part of the scientific corps, and that this was reflected in the work of the administrative and publication branches. In addition to their regular duties, officers of the Survey have, by my direction or with my approval, been engaged in promoting the purposes of the Louisiana Purchase Exposition at St. Louis, especially in the department of mines and minerals.

GEOLOGIC BRANCH.—The organization of the geologic branch remained essentially as during the previous year—under the following four divisions: (1) Geology and paleontology; (2) Alaskan mineral resources; (3) mining and mineral resources; (4) chemical and physical research. Each division is in charge of a geologist, who is responsible to the Director for its administration.

In the division of geology and paleontology administrative control is in a measure separated from scientific supervision, the former resting with the geologist in charge of geology and the latter with the six section chiefs. One section, that of Pleistocene geology, has been discontinued and another, somewhat broader in scope—the section of physiographic and glacial geology—has been established in its place.

During the year work was carried on in 39 States and Territories by 60 parties, of which 53 were engaged in geologic investigations and 7 chiefly in paleontologic, both classes of work being essential to the preparation of the geologic map of the United States. This great

undertaking has now reached a point where its value can be adequately estimated. The geologic mapping of the surface formations has been extended over about 171,000 square miles, and 106 geologic folios have been published, while nearly an equal number are in various stages of preparation. These folios consist of descriptive text, a topographic sheet, geologic sheets for areal and economic geology, structure and columnar sections, etc. Each folio thus presents a practically complete history of the topography, geology, and mineral resources of the area described.

While areal mapping of this character is of great economic importance, a constantly increasing proportion of the Survey work is directed to the immediate advancement of the mining industry. The great mining districts are taken up for investigation as rapidly as available means permit, and these investigations have resulted not only in material assistance in the economic development of these particular districts, but in far-reaching conclusions as to the fundamental theories of ore deposition, which have been of the highest benefit to the mining industry throughout the world.

Recognizing the importance of promptly placing the information before the public, the results of all economic investigations made during the field season of 1903 were summarized and published in a single bulletin. Two such annual volumes, summarizing the economic results of the work of preceding season, have now been published, and their value to the mining industry has been amply demonstrated.

In accordance with the policy of each year summarizing all existing information regarding some important mineral product, the cement industry was taken up last year and has been thoroughly investigated, particularly with reference to the distribution and geologic relations of the raw materials, both developed and undeveloped. The remarkable growth of this industry within the last few years makes this investigation exceptionally timely.

SURVEYS AND INVESTIGATIONS IN ALASKA.—The remoteness of Alaska, and the exceptional conditions under which work in that Territory must be carried on, demand that its administration be separated from that of the work in the States. For several years this control was exercised by a committee of geologists and topographers, but, as noted in my last report, on July 1, 1903, a new administrative division, in charge of one of the geologists of the Survey, assumed control of all Alaskan work. This vesting of the entire responsibility in one person, whose training and experience in the Territory has fitted him for the duties, has been justified by the result of the year's work.

During the field season of 1903 seven parties were engaged in geologic and topographic surveys in Alaska. One party investigated the

geology and mineral resources of the Juneau gold belt, another the Controller Bay and Cook Inlet oil fields, a third the tin deposits and gold placers of Seward Peninsula, a fourth the geology and topography of the northeastern part of Seward Peninsula, a fifth the Fortymile, Birch Creek, and Fairbanks placers, a sixth made topographic surveys in the last-named region, and a seventh party studied the stratigraphy along the Yukon, with special reference to coal-bearing horizons. The results of these investigations and surveys are given in considerable detail in the Director's report, recently submitted, and in special reports and maps that are available to the public. These results are of great importance to all persons interested in the development of that vast region.

At the last session Congress increased somewhat the annual appropriation for investigations in Alaska, so that during the season that has just closed eight parties worked in different portions of the Territory—five making geologic surveys, two topographic surveys, and one an investigation of methods of placer mining. The full results of these latest investigations have not yet been reported to me; but the preliminary reports of the men in charge indicate that valuable data has been acquired, which will be assembled and published in reports and maps for distribution to the public at as early a date as may be practicable.

MINING AND MINERAL RESOURCES.—It has been stated in previous reports that a list of the gold and silver mines of the United States, supplemented by all obtainable information concerning the characteristics of each mine, was in process of compilation by this division of the Survey. This list has been completed, and is now being brought up to date. It shows that there were about 20,000 such mines in existence at the close of the calendar year 1902, and the revision now in progress will doubtless throw additional and valuable light upon the regions in which the mines are located, as well as upon the mines themselves.

The last Congress, by the deficiency act of February 18, 1904, appropriated $30,000 "for analyzing and testing at the Louisiana Purchase Exposition the coals and lignites of the United States, in order to determine their fuel value and the most economic method for their utilization for different purposes, under the supervision of the Director of the United States Geological Survey." The deficiency act of April 27, 1904, increased this sum to $60,000. These tests are now in progress, under the management of a committee appointed by the Director, and already the results obtained, though not yet published, show that the investigation will be of great value to the producers and consumers of coal and to the engineering profession.

The continued industrial progress of the United States is shown by

the fact that, for the fourth year in succession, the total value of the mineral products of the country exceeds $1,000,000,000, the value for the calendar year 1903 being in excess of $1,400,000,000. This increase was due to the great output of nonmetallic products, which increased about $175,000,000 in value as compared with 1902, the metallic products having lost nearly $18,000,000, the loss being due chiefly to the decrease of about $28,000,000 in the value of pig iron, though both gold and silver also show a loss in production and in value. The production of coal has more than recovered its normal rate of increase from the depression of 1902; the phenomenal growth of the cement industry has continued; the stone industry has increased over 50 per cent in value since 1900; and tin mines of commercial production have been developed in South Carolina.

CHEMICAL AND PHYSICAL LABORATORIES.—The analyses and investigations made in the chemical and physical laboratories are essential to the geologic work of the Survey, and these laboratories are being gradually enlarged and strengthened, in respect both to personnel and to equipment. The routine work consisted of 323 analyses and 290 qualitative determinations of minerals. The special researches were along such lines as the accuracy of the fire assay for tellurides; the secondary enrichment of ore bodies; the absorption of copper salts by clays; the replacement of bases in silicates; the lithia minerals found in southern California; the thermal properties of the plagioclase feldspars at ordinary pressures; experiments on "black bodies," or bodies which reflect no heat, a method of determining temperature at a distance—for example, in the crater of a volcano; experiments on elasticity, etc. The Carnegie Institution has made a grant of money for researches in elasticity and high temperature, laboratory space to be furnished by the Survey. The experimentation will be carried on in conjunction with that of the Survey.

Standard detailed topographic mapping was completed during the year for 34,140 square miles. A portion of this was resurvey of old reconnaissance maps, the area of new surveys being 26,699 square miles, distributed through 31 States and Territories. The total area surveyed in the United States to April 30, 1904, was 936,319 square miles, or about 31 per cent of the whole country, the area of which, exclusive of Alaska and Hawaii, is accepted as 3,024,880 square miles. These total figures differ by summation from previous reports by about 20,000 square miles, the discrepancy being due to the fact that a careful remeasurement of the area surveyed in each State and Territory was made during the last year.

During the season primary azimuth observations were made at two triangulation stations, 403 triangulation stations were occupied and located, and 2,283 miles of traverse were run for primary control. In

connection with the topographic surveys there were run 28,083 linear miles of spirit levels, making the total mileage of such levels run by the Survey since 1896, when Congress authorized this class of work, 130,884 miles. In the office the drawing of 110 standard atlas sheets was completed.

Cooperative arrangements for surveys were made with eleven States. The State engineer and surveyor of New York allotted $19,000; the State survey commission of Pennsylvania, $15,000; the State geologist of West Virginia, $20,000; the governor of Ohio, $28,800; the State of California, $10,000; the curator of the State geology department of Kentucky, $5,500; the State survey commission of Maine, $2,500; the State geologist of Maryland, $750; the State geologist of Alabama, $1,000; the State geologist of Michigan, $1,700, and the Louisiana experiment station, $1,500. Thus $105,750 was added by the States mentioned to the Federal appropriation for topographic work.

Examination and survey of forest reserves.—During the fiscal year an area of 17,500 square miles included within forest reserves or in regions in which forest reserves were in contemplation was examined, and reports were prepared upon the lands and the timber. This aggregate area consisted of portions of the Gila River and the Lincoln forest reserves, in New Mexico; that part of the Yellowstone Forest Reserve which lies within the State of Montana, with large adjacent regions; an extensive tract of country lying east of San Diego, Cal., from which it was proposed to form a forest reserve; the Santa Barbara Forest Reserve in southern California; and the mountain region in the neighborhood of San Luis Obispo. An examination of the mountains southeast of Albuquerque, N. Mex., was in progress at the close of the fiscal year with a view to the creation of a forest reserve therein. The total forest-reserve area newly surveyed topographically was 6,864 square miles, and 395 square miles were resurveyed. Boundary lines of reserves were surveyed and marked to the extent of 278 miles.

Hydrographic branch.—Widespread demands for more complete information regarding the country's water resources have rendered the work of the hydrographic branch of the Geological Survey of continually increasing importance. The appropriation for this work during the last fiscal year was $200,000, the same as for the previous year.

The investigations were directed—first, to procuring fundamental facts concerning the flow of surface streams; second, to ascertaining the location and movements of underground waters; and, third, to determining the physical characteristics, such as hardness, color, turbidity, etc., of these waters and discovering the sources and effects of their pollution.

To ascertain the flow of surface streams approximately 600 gauging stations have been established in different parts of the country, by means of which reliable records of the discharge of practically all important streams are obtained. These records afford a basis upon which manufacturers and investors can plan the development of water powers and municipalities can solve the problem of adequate water supplies. They also enable the irrigator to determine the acreage which he can reclaim from desert conditions and the crops which he can safely plant. These stream measurements are invaluable also as a basis for the study of such pressing problems as the relation of rainfall to run-off, the effects which forests exert upon stream flow, the occurrence and control of floods, etc.

In New England, New York, and all along the Allegheny Range the surface waters are of the utmost value as a source of cheap power. From the Southern States particularly there is an urgent demand for stream-discharge data, for use in the development of manufacturing enterprises. In the Eastern and Central States, a region having a large and an increasing population, both surface and underground waters are essential not only for the development of manufacturing industries but also for municipal supply. In sections where the population is becoming dense, even small and insignificant streams must be utilized to their fullest capacity for domestic purposes. In this region questions relating to the use of waters for municipal purposes are complicated by the fact that cities not only draw their supplies from convenient streams but in too many cases sewer into them as well, so that it becomes highly important to ascertain the quality of the waters.

With the growth of population and the building of large cities having great manufacturing interests along water courses protection from the devastating effects of floods becomes a matter of great importance. As the control of streams depends upon accurate and detailed knowledge of their discharge and run-off, the investigation of these questions is becoming more and more urgent.

In the Western States the problem is somewhat different. There, owing to scarcity of rainfall, intelligent and complete use of the waters becomes absolutely necessary. Not only are the streams required for power and for municipal use, as in the East, but they must also serve the farmer for irrigation. In the West, therefore, complete knowledge of the volume and the conditions of the water supply is absolutely necessary. Careful stream gaugings are being carried on by the Survey in all the arid States and Territories, in order that the facts concerning the West's greatest resource, its flowing streams, may be available when needed.

The investigation of underground waters consists in the collection and careful study of well records, obtained from all parts of the coun-

try, and detailed studies of special localities where the determination of the underground supply is of particular importance. Such, for example, was the work done last year on Long Island, in cooperation with the city of New York, to ascertain the available supply. In investigations of this character it becomes necessary to determine the occurrence and extent of the water-bearing beds, and therefore the knowledge of the hydrographer is supplemented by that of the geologist. Work of this character has not only assisted in the solution of local problems, but has been extended over wide areas. Important results have been the location of a great artesian basin underlying the Great Plains region, particularly accessible in North Dakota, South Dakota, and Nebraska, and the location of minor basins in Washington, Oregon, and Idaho. Such work has also been directed toward discovering the rate and direction of flow of subsurface waters in the dry beds of streams in the arid regions, thus materially increasing the available supply for irrigation and other uses and contributing valuable scientific information on a subject that has been hitherto but little understood.

The work of determining the quality of waters covers a broad and interesting field which has not yet been wholly occupied. Manufacturing and other industries are demanding information regarding the hardness, turbidity, alkalinity, and other physical conditions of surface and underground waters which have a direct and harmful effect upon their plants or products. A systematic attempt is being made to collect this information by simple field methods, and the widespread interest the work is arousing indicates its value. The more serious problem of pollution from sewage and manufacturing waste is also receiving attention. Conditions of exceptional pollution in thickly settled portions of the country are being studied and the facts collected are presented in reports which are arousing public interest in abuses of this nature.

Reclamation Service. The corps of engineers designated by the general term "reclamation service" was actively engaged during the year in the operations authorized by the act of June 17, 1902, which sets aside the proceeds from the disposal of the public lands for the examination, survey, and construction of irrigation works for the reclamation of arid and semiarid lands. The origin and gradual development of the reclamation service have been described in previous reports. The general investigation of the reclamation problem in this country, begun in 1876 by the late Maj. J. W. Powell, derived strength and stability from the law of 1888, which authorized the Director of the Geological Survey to investigate the extent to which the arid lands could be reclaimed by irrigation. Subsequent appropriation acts, especially those of 1894 and following years, provided funds for meas-

uring the streams, and when the reclamation law went into effect, on June 17, 1902, there existed in the Geological Survey a small corps of engineers consisting of men of training and experience in hydraulic investigations and construction.

From time to time other men have been added to this group through the operation of the civil-service law, competitive examinations for all grades of positions having been held. The education, ability, tact, and professional standing of each candidate have been carefully considered, and every test dictated by business prudence has been applied in order that a picked body of professional men of the highest character and ability might be obtained.

The reclamation law is very general in its provisions, and leaves to administrative discretion a large number of important and far-reaching matters. Therefore, extraordinary care has been used in selecting the men who are to put the act into effect and upon whose judgment and integrity the success of the law must depend.

The interests connected with reclamation in the West are so numerous and so complex that they can not be completely guarded in advance by laws and regulations; these must be founded on experience obtained day by day. The problems are not those of engineering only, but pertain also to political and social welfare. The requirements are not simply great works well and economically constructed, but, in addition, the satisfactory initial operation of the works and the organization of prosperous communities into whose hands the completed works are ultimately to be placed, so that there will be every reason to believe that the community management will give good results to the Commonwealth. The reclamation work must therefore be placed in the hands of men who for years have given the subject their best thought, and these men must be protected from external pressure and guarded from the possibility of selfish consideration. In the organic law of the Geological Survey it is provided that the Director and members shall have no personal or private interests in the lands or mineral wealth of the region under survey, and shall execute no surveys or examinations for private parties or corporations. This law applies to the reclamation service, which has been made a branch of the Geological Survey, and although the law may occasionally work hardship, I believe that good administration requires its enforcement.

During the two years that have passed since the law was enacted the reclamation service has been developed upon broad lines, and the most important precedents have been set for future guidance. Each individual understands that his retention in the service and his future advancement depend wholly upon merit, and that influence, direct or indirect, is rigidly barred.

The general form of organization has been designed to fit the pecu-

liar conditions. Work is being undertaken simultaneously in thirteen States and Territories, at localities which are remote from one another and many of which are distant from ordinary lines of transportation. Operations of great magnitude, involving detailed local knowledge, must be carried on expeditiously and economically, and at the same time care must be taken to insure good business practice and the fulfillment of the customary legal or governmental requirements.

In matters involving judgment or policy a board or committee considers and reports upon the general line of action that should be taken, but the execution of every important piece of work is left to one man, so that credit can be bestowed or blame be fixed on individuals. For example, the engineer in charge of a particular piece of work has full power and authority to push forward that work, being held personally responsible for economy and effectiveness. The district engineer, to whom he reports, is, in turn, held responsible for all the work of the engineers under him. In the larger matters of discretion, as to location of works, methods of building, etc., the district engineer's recommendations are considered by a board of engineers who are thoroughly familiar with all the circumstances, and the board's advice, if approved, becomes effective and is carried out. The various district engineers, while engrossed in the particular responsibility put upon them, are kept fully advised by the consulting boards, and are informed concerning the ways adopted by other men in similar circumstances to overcome engineering difficulties.

In great works whose success depends upon continuity of purpose and of plan every effort must be made to guard against expensive and often destructive alterations due to changes in personnel. In each line of work, therefore, a second man, or understudy, is provided, to whom important duties are assigned and who will be able, if necessary, temporarily or permanently to take the place of his immediate chief.

Subject to the general supervision of the Secretary of the Interior, the organization is, in brief, as follows: At the head stands the Director of the Geological Survey, under whom the organization has developed and to whom reports are made; next in order is the chief engineer and the assistant chief engineer. The chief engineer gives attention to the general policy and conduct of the service, the recommendations made by the boards of engineers, the personnel of the service, the expedition of business, the cost and value of results, and the dealings with water users' associations and with the public in general.

The assistant chief engineer is principal adviser in all matters, acts as chairman of many of the consulting boards, and gives his time particularly to acquiring full knowledge of and supervising the larger

work in the field. His training and experience fit him to take at any time the position of chief engineer, and to make effective the policy outlined without any disturbance of the larger plans.

Next comes the group of supervising engineers who represent, each for certain large geographic areas, the chief engineer, and who determine immediately the course of action to be followed in dealing with many matters of great importance which should be settled on the spot without reference to the eastern office.

The consulting engineers form a group of older men of national or wide repute who have built large works and who are now in a position to consider such matters free from the petty annoyances and distractions of administrative work, and to give sound engineering advice. Each consulting engineer has a certain sphere of activity, which is restricted either to a particular kind of construction or to certain localities where large works are planned or are under construction.

The line between the supervising and the consulting engineers is one which can not be strictly drawn, as the supervising engineers must give the benefit of their experience and advice to all the men with whom they come in contact.

From time to time project boards are organized, which consist of supervising, consulting, and other engineers or specialists. Plans for every large work, with all the information concerning it, are submitted, when convenient, to a project board, and the matter then becomes a subject of discussion, the board visiting the various localities and noting conditions, with the full results of surveys and estimates in hand. Such a project board may be assisted by advice or information given by State officials or interested citizens, and may listen to any statement which parties in interest may submit. The members of any project board have served on other boards, and have thus been brought into contact with the other supervising and consulting engineers and with similar problems elsewhere. There necessarily results a diffusion of general knowledge and a unification of purpose and policy.

The district engineers have charge of all the operations within a certain drainage area of the State. They and their assistants, having full knowledge of the physical and social conditions, make recommendations for initiating work, and carry these, when approved, into execution. Many of the district engineers have occupied the position of State engineer or have been connected with the practical development of work in the States in which they are located, and thus bring to the service the results of mature experience.

The surveys and examinations made since the passage of the reclamation law, and especially during the last year, have been pushed rapidly in the thirteen States and three Territories designated by the law. Many projects, of all degrees of feasibility and merit, have been studied.

In locating large works it has been necessary to give careful thought to a multitude of limiting conditions. The first condition is, of course, available money; next, the feasibility and value to the country of the works to be built; then the location with reference to State boundaries, the demands of the people, the facilities offered, etc. To give proper weight to all these matters is not easy, and there is opportunity for wide divergence of opinion and for criticism of almost any decision. A citizen, in judging of the advisability of any reclamation work, is in danger of being influenced largely by what he conceives would be the effect of similar work upon land values in his immediate neighborhood, and of losing sight of the possibility that there may be other localities where such work will be of far greater value to the Commonwealth. In determining upon any particular reclamation project the attempt is made to view it wholly from the standpoint of feasibility and value to the country as a whole, and the men whose recommendations are considered have absolutely no personal aims or ambitions which the decision could affect.

In surveying the arid regions broadly it is self-evident that the greatest good can come from works built in the most arid portions, where the climatic conditions are favorable to the most intensive farming, and where the creation of a stable population will have a direct result in stimulating many industries, such as stock raising and mining. At the other extreme are the semiarid localities, where fair crops are occasionally raised, and where the introduction of irrigation has in the past not proved successful because of popular indifference, growing out of the fact that when irrigation is tried and the novelty wears off the people do not care to go to the labor and trouble of maintaining and utilizing irrigation works. The introduction of irrigation in such communities is similar to attempts made at dairy farming in an open stock-range country; theoretically the profit from a few dairy cows may be larger than that from range cattle, but the conditions for making dairying successful are absent.

Construction work is carried on most largely under contracts, much in the usual manner. Plans and specifications prepared by the district engineers are submitted to the project boards, and after these have been fully considered by the boards and approved by the Department, advertisements are published, bids opened, and contracts awarded. In all large work which is susceptible of accurate description the ordinary contract system is effective, but there are many classes of work for which it is not desirable to contract, such as the digging of test pits, boring by diamond drills, and construction of roads or trails to get in machinery. All these classes of operations, which are of the nature of exploration or examination preparatory to a full knowledge of the conditions, must be carried on by the engineer in charge.

Contracts have been let for the construction of works in Nevada, Arizona, Idaho, Colorado, and New Mexico, and plans and specifications are under consideration for work in the other States and Territories. In initiating the various projects the lines of least resistance have been followed; that is to say, where the information was most complete and the conditions were most favorable for producing immediate results the works have been begun. In undertaking new projects experience has shown that it is advisable to proceed with caution, and to secure signed contracts regarding lands and rights before actual construction begins. Details relating to location and cost of works and building proposed are given in the first and second annual reports of the reclamation service, and in the third report, which is in preparation, and will be laid before Congress early in December.

Some impatience is expressed at the slowness with which the reclamation fund is being expended. I believe, however, that the work is being done as rapidly as is consistent with thoroughness and economy. These works are in striking contrast with those built by private enterprise. The latter are largely temporary in character, are built with the minimum amount of capital, and it is understood that they will be gradually renewed and extended as funds may be procured. Headworks, flumes, and other structures are usually built of wood, the ditches are so dug that they may be enlarged, and as the country develops and the old structures decay new headworks and flumes are built to meet the increasing needs. But the works to be built by the Government should be permanent in character and be designed with reference to complete development. The structures must be as nearly permanent as stone, concrete, or steel can make them. At the same time they must not be built of excessive size, and money must not be wasted in giving them a strength which will not be demanded. For these structures there are no standard sizes or conditions, such as exist in many other branches of engineering. For example, in designing a railroad or waterworks system there are standard sizes and forms of material to be used, and the prices are well established; it is a matter largely of putting together parts the cost of which is well known; but in irrigation construction on a large scale each system must be developed from original plans.

Usually, however, the engineering features do not offer as great causes of delay as do the legal or human questions. Almost everywhere there are land titles to be adjusted, rights of way to be secured, and claims to water to be considered. Frequently the latter are of the most elusive character and require great patience and occasionally judicial decision to determine their validity and extent. In planning most of the projects great numbers of persons must be dealt with, individually and collectively. Popular impressions concerning the

reclamation law and its effects are frequently erroneous, and the false impressions must be removed and the people be induced to enter into contracts regarding the future use of the water.

RECLAMATION FUND.—The funds provided by the act of June 17, 1902, consisting of the proceeds of the disposal of public lands in 13 States and 3 Territories, at present amount as follows:

Fiscal year—	
1901	$3,144,821.91
1902	4,585,520.53
1903	8,713,996.60
1904 (approximate)	6,568,497.42
Total	23,012,836.46

The fund probably reached its maximum in 1903, and while additional amounts are to be expected the estimates for future expenditures should be based upon the assumption of a gradually diminishing income each year. By assuming for the current fiscal year of 1905 an income of $4,000,000, there would result a total, in round numbers, of $27,000,000 available in the near future for work now proposed.

Section 9 of the reclamation act declares it to be the duty of the Secretary of the Interior, as far as may be practicable, to expend the major portion of the fund within the limits of each State and Territory from which they arise. The term "major portion," may be justly set down as 51 per cent, leaving the minor portion, or 49 per cent, to be expended with a larger degree of discretion.

It is further provided in said section 9 that the Secretary may temporarily use such portion of said funds for the benefit of arid or semi-arid lands in any particular State or Territory named in the act as he may deem advisable, the excess to be ultimately returned. While discretion is given for temporarily diverting the major portion of the funds, it is not, however, deemed wise to make plans which contemplate such diversion. At present all plans are made with a view of expending the major portion of the funds now on hand in each of the States and Territories named. This major portion, or 51 per cent, may be designated as the "restricted" portion of the reclamation fund.

RESTRICTED FUNDS.

The following list gives, by States and Territories, the total amount of funds received during the fiscal years 1901–1904. For 1904 the figures are approximate only, but the totals are sufficiently exact for purposes of estimates.

With the total fund is given the restricted portion, or 51 per cent, which should be devoted to surveys, examinations, and construction in

the States and Territories named, subject to the finding of feasible projects.

State or Territory.	Aggregate.	Restricted portion, or 51 per cent.
Arizona	$166,403.86	$84,865.97
California	1,971,908.21	1,005,673.19
Colorado	1,591,167.56	811,495.46
Idaho	1,645,529.55	839,220.07
Kansas	97,849.58	49,903.28
Montana	1,749,002.90	891,991.48
Nebraska	477,973.42	243,766.44
Nevada	48,153.41	24,558.24
New Mexico	420,202.26	214,303.15
North Dakota	3,406,100.14	1,737,111.07
Oklahoma	2,552,137.33	1,301,590.04
Oregon	4,230,659.75	2,157,636.47
South Dakota	742,780.60	378,818.11
Utah	302,351.03	154,199.02
Washington	2,735,362.98	1,395,035,12
Wyoming	875,253.88	446,379.48
Total	23,012,836.46	11,736,546.59

UNRESTRICTED FUND.

The unrestricted portion of the reclamation fund, or, in other words, 49 per cent, may be utilized in any of the above States or Territories, irrespective of political divisions; and in plans for its expenditure consideration is given primarily to the feasibility of the project and the probable results in conferring benefits upon the country as a whole. The engineers, who, through many years of experience, have obtained a broad and comprehensive knowledge of the arid and semiarid regions, have considered the costs and benefits of all of the known and feasible projects in the West, and out of these have brought to the attention of the Secretary those projects which, from an engineering and business standpoint, are considered to be the most meritorious.

At various times a number of projects have been approved, and specific sums have been set aside to be expended on these. The time has arrived when the completion of projects under consideration will require all the available funds, including those of the current fiscal year.

ALLOTMENT OF FUNDS.

There has been set aside on the books of the reclamation service 51 per cent of the funds rising from each State or Territory, to be expended in that State or Territory if feasible projects can be found.

In considering the feasibility, there is borne in mind the spirit of

the law and its intent to reclaim land and to so guard the fund that it shall be returned to the Treasury for use again. No project is considered as feasible which is experimental in character or in which the return of the funds is not guaranteed in the most effective manner. It is not intended to make experiments with this fund, or to irrigate lands which may produce crops by dry farming in ordinary years, or to bring water to land which, from any cause, will not probably be continuously irrigated and cultivated.

The following table gives the amount of money now tentatively allotted for surveys and construction work in the various States and Territories. A portion of this money has already been expended in works now under way, and in several of the States and Territories where feasible projects have not been selected, the amount noted is the restricted portion of the fund, which is to be held until the feasibility of irrigation works can be definitely determined.

State or Territory.	Project.	Acres.	Estimate.	Authority.
Arizona	Salt River	160,000	$3,000,000	General estimates.[a]
California	Yuma	100,000	3,000,000	May 20, 1904.
Colorado	Uncompahgre	100,000	2,250,000	June 7, 1904.
Idaho	Minidoka	130,000	2,600,000	April 23, 1904.
Kansas	Pumping (?)	2,000	49,903	Restricted fund.
Montana	Milk River (?)	60,000	891,991	Do.
Nebraska	North Platte	100,000	1,000,000	May 3, 1904.[b]
Nevada	Truckee	200,000	3,000,000	General estimates.[a]
New Mexico	Hondo	10,000	240,000	Nov. 10, 1903.
North Dakota	Fort Buford and pumping	60,000	1,737,111	Restricted fund.[c]
Oklahoma	Otter Creek	40,000	1,301,590	Do.
Oregon	Malheur	90,000	2,600,600	May 11, 1904.
South Dakota	Bellefourche	60,000	2,100,000	May 10, 1904.
Utah	Utah Lake	20,000	154,199	Restricted fund.
Washington	Palouse	100,000	1,395,035	Do.
Wyoming	Shoshone	100,000	2,250,000	Feb. 10, 1904.
Total		1,332,000	26,970,429	

[a] See letter of March 14, 1904, and quarterly estimates.
[b] For Pathfinder reservoir in Wyoming; further details under survey.
[c] Fort Buford project heads in Montana; the sum of $1,200,000 set aside May 10, 1904.

SECONDARY PROJECTS.

While surveys, examinations, or construction are being carried on according to the list above given, active work is also continued on the examination of secondary projects in each State, so that in the event of any unforeseen contingency preventing the taking up of construction or the early completion of the project first in hand there will be full information available concerning some other project which may be pushed forward. It is possible that owing to delays or difficulties

in engineering or in securing titles to lands or waters it will be found desirable to drop one of the projects above named and substitute another.

RECONNOISSANCE.

Active exploration and reconnoissance of the entire arid and semi-arid region is being carried on to discover opportunities for reclamation, so that the knowledge of the entire region may be as complete as possible and definite facts may be given as to the merits of the enterprises which may be discussed in the future.

CONTRACTS.

The following list gives the contracts already entered into for the performance of specific work, or for the purchase of machinery and supplies. This does not represent the total expenditure from the reclamation fund, as most of the preliminary work of surveying, exploring, digging test pits, operating diamond drills, road building, and similar operations are done under what is commonly known as "force account," the money charged to this account being expended for employing engineers and their assistants and hiring laborers.

The total amounts given in this list are approximate only, as the bids were made on unit prices for excavation, rock work, concrete, and other items. The sums given are the assumed quantities multiplied by the unit prices—these quantities being, as stated in the contract, subject to change as the conditions develop and the material is classified.

Salt River project, Arizona.

December 17, 1903, Wilcox & Rose, Riverside, Cal.; cement mill	$13,997.53
December 22, 1903, Allis-Chalmers Company, Chicago, Ill.; machinery for cement plant	38,798.00
December 26, 1903, James R. Thorpe, Denver, Colo.; telephone line	30,779.00
January 6, 1904, Hendrie & Bolthoff Manufacturing Company, Denver, Colo.; motors for power plant	10,631.00
January 8, 1904, Bullock Electric Manufacturing Company, Cincinnati, Ohio; electric machinery for power plant	11,375.00
February 18, 1904, Stillwell-Bierce & Smith-Vaile Company, Dayton, Ohio; water wheel and appurtenances	8,445.00
March 18, 1904, Robert Sherer & Co., Los Angeles, Cal.; schedule 1 of power canal	220,000.00
March 23, 1904, John Tuttle, San Francisco, Cal.; schedule 2 of power canal	110,000.00
March 23, 1904, John Tuttle, San Francisco, Cal.; sluicing tunnel	12,000.00
March 23, 1904, Llewellyn Iron Works, Los Angeles, Cal.; sluicing gates to be placed in tunnel	102,000.00

Uncompahgre Valley project, Colorado.

March 23, 1904, Taylor & Moore Construction Company, Hillsboro, Tex.; construction of Gunnison tunnel	$1,000,000.00
March 23, 1904, E. A. Hess, Iowa; Lyons telephone system	6,384.20

Minidoka project, Idaho.

September 17, 1904, Bates & Rogers Construction Company, Chicago, Ill.; construction of project	$378,283.50
September 20, 1904, Portland Cement Company of Utah (Limited); fourteen thousand barrels of cement	41,300.00

Truckee-Carson project, Nevada.

August 28, 1903, E. B. and A. L. Stone Company, Oakland, Cal.; division 3 of excavation for canal	$199,250.00
September 3, 1903, C. A. Warren & Company, San Francisco, Cal.; divisions 1 and 2 of excavations for canal	716,087.00
December 17, 1903, J. D. Spreckels & Bros. Company, San Francisco, Cal.; thirty thousand barrels of Portland cement	76,500.00
August 19, 1904, Clarence W. Swain, Ione, Cal.; schedule D, highway bridges	4,288.00
September 9, 1904, Pacific Coast Construction Company, Portland, Oreg.; schedule A, distributing canals and structures	195,887.00
September 17, 1904, San Francisco Construction Company, San Francisco, Cal.; schedule C, distributing canals and structures	43,219.50
September 29, 1904, R. C. Mattingly, San Francisco, Cal.; schedule B, distributing canals and structures	52,562.50

PUBLICATIONS.—The Director of the Survey reports that large increases may be noted in the amount of manuscript accepted and prepared for publication during the year, in the number of geologic folios published, the number of topographic atlas sheets and maps completed, and the amount of map work done by the photographic laboratory. He assures me, however, that emphasis is not placed on quantity, but that year by year the qualitative standard is being raised. The demand for many of the Survey publications is so great that the stock on hand is rapidly exhausted and new editions, for which the law provides, are ordered.

STATE COOPERATION.—Understandings to promote the common purpose of advancing knowledge and aiding development have existed between State geologists and the Federal survey ever since the latter was organized. But more definite agreements were entered into early in the history of the Survey. In 1884 an agreement with a board of commissioners of the State of Massachusetts provided that the expense of topographic work in that State should be divided, the State meeting one-half the expenditure for field work and the Federal survey one-half, the latter engraving the maps and giving transfers of the plates to the State commissioners. Since that date agreements involv-

ing cooperation in work, geologic and hydrographic, as well as topographic, have been made by the officials of many of the States. During the last year, under such agreements, geologic work progressed in 6 States, which contributed nearly $12,000; topographic work in 11 States (named in an earlier paragraph), which contributed more than $100,000, and hydrographic work in 9 States, which contributed about $15,000.

EDUCATION.

The Commissioner of Education presents some interesting data and statistics of education in the United States.

The number of pupils enrolled in the common schools during the year was 16,009,361, the same being 20.04 per cent of the entire population, as estimated by the Census Bureau, viz, 79,900,389. The average daily attendance for 1903 was 11,054,502, the same being 69.2 per cent of the total number enrolled. This is the largest average attendance on the number enrolled ever reported in the United States. The average monthly wages of teachers was $49.98 for males and $40.51 for females.

The above figures relate to the public schools only. In addition the private schools are estimated at 1,093,876 pupils for the elementary schools, and 168,223 students are reported for academies and other secondary schools.

The total enrollment for the year, including public and private, elementary, secondary, and higher education, was 17,539,478 pupils, and to this there should be an addition made for evening schools, business schools, private kindergartens, Indian schools, State schools for defectives, orphans, etc., 648,440, making a grand total of 18,187,918 in general and special schools.

In 1903, 587 cities, containing 8,000 inhabitants and upwards, and 589 villages, containing 4,000 to 8,000 inhabitants, reported to the Bureau. The aggregate number of public school children enrolled in these 587 cities was 4,274,071 pupils; and there was also an enrollment of 968,002 pupils in private and parochial schools; male teachers, 7,280; female teachers, 86,856. These cities alone expended $122,353,007, and their entire population aggregated 25,344,214 people.

Students receiving secondary instruction in public high schools numbered, in all, 776,635. The number has more than doubled in thirteen years. Of these pupils, 608,412 were enrolled in public institutions and 168,223 in private institutions and in preparatory departments of institutions for higher education. The value of the school property of the high schools of the United States amounts to nearly 139 million dollars; that of private schools of the same grade to about 119 million dollars. About one-half of the private schools are controlled by religious denominations.

The total number of universities, colleges, and technological schools reporting in 1903 is 627, of which 129 admit women only; 132 universities and colleges admit only men to the undergraduate department, and 323 admit both men and women. Of the 49 schools of technology, 26 institutions report women among their undergraduates. The total number of students resident at these institutions in 1903 was 114,130. Of these, 69,178 men and 24,863 women were in universities and colleges for men and for both sexes, 5,749 were in colleges for women, 13,216 men and 1,124 women were in schools of technology. Of the entire number (114,130), 51,152 were in classical courses and 13,605 were in other courses for general culture, 7,397 in general science courses, and 3,306 in agriculture. The total value of property possessed by these institutions for higher education amounts to $432,236,725; seven have endowments of more than 5 million dollars each, and the same number have from 2 million to 5 million dollars. The total amount of benefactions reported by the several institutions for higher education as having been received during the year is $14,750,501.

Professional students and graduates for 1903 were as follows: Theological, 153 schools, 7,372 students, and 1,545 graduates; law, 99 schools, 14,057 students, and 3,432 graduates; medical, 146 schools, 27,062 students, 5,611 graduates; dental, 54 schools, 8,298 students, 2,182 graduates; pharmaceutical, 61 schools, 4,411 students, 1,372 graduates; veterinary, 11 schools, 671 students, 137 graduates.

In 1903 there were 286 public and private normal schools reporting to the Bureau of Education. There were 64,114 normal students in these institutions, 9,927 of whom graduated at the close of the scholastic year. Besides these there were 23,889 normal students in universities and colleges and high schools. In 1903 the amount for current expenses had reached $3,582,168, and for buildings $1,268,742. One hundred and thirty-seven public normal schools report an aggregate of $24,156,470 as the value of their school property.

One hundred and eighty-six manual and industrial schools reported in 1903, the number of pupils being 56,432 (32,872 boys and 23,560 girls). The current expenses were $1,099,926.

Commerce is reported taught in 170 universities and colleges, 50 public and private normal schools, 978 academies, 3,673 public high schools, and 516 business schools—a total of 243,521 students.

In 1903 the common school enrollment in colored schools in the 16 former slave States and the District of Columbia numbered 1,578,632. The expenditure for the public schools of both races in these 16 States and the District of Columbia amounted to $39,582,654.

From reports received it appears that there were during the year 38 schools for the blind, containing 4,363 pupils; 127 schools for the

deaf, with 11,932 pupils; 20 State schools for the feeble-minded; showing 12,714 pupils in attendance.

There were 96 reform schools in the United States in 1903, enrolling 31,468 pupils; of these, 21,603 were learning useful trades.

EDUCATION IN ALASKA.—The Bureau maintained during the past year, outside of incorporated towns, 35 public schools in the district of Alaska, with 38 teachers, and an enrollment of 2,257 pupils.

An act making further provision for a civil government for Alaska, and for other purposes, approved June 6, 1900, section 460, chapter 44, part 2 (31 Stat. L., 330), provides a tax on business and trade in the form of a license. In section 203, chapter 21, part 5, of said act, provision is made whereby 50 per cent of said license money collected in incorporated towns shall be turned over to the treasury of said town for school purposes.

By an amendment to the above section 203, approved March 3, 1901, it was provided that 50 per cent of all license moneys that may hereafter be paid for business carried on outside incorporated towns in the district of Alaska shall be set aside to be expended, within the discretion and under the direction of the Secretary of the Interior, for school purposes outside incorporated towns in said district.

In the application of this law the United States district courts of Alaska have taken "court expenses" from the license fund received from outside of incorporated towns.

To secure the intention of Congress—that 50 per cent of all license moneys collected outside of incorporated towns in Alaska should go for education in Alaska—the Fifty-seventh Congress, second session, amended the above provisions to read as follows:

Provided, That fifty per centum of all license moneys provided for by said act of Congress approved March third, eighteen hundred and ninety-nine, and any amendments made thereto, that may hereafter be paid for business carried on outside incorporated towns in the district of Alaska, shall be covered into the Treasury of the United States and set aside to be expended, so far as may be deemed necessary, by the Secretary of the Interior, within his discretion and under his direction, for school purposes outside incorporated towns in said district of Alaska.

This amendment was approved March 2, 1903, and under it the 50 per cent of license fees collected during the first nine months of the fiscal year 1904 amounted to $35,582.01. After the opening of spring communication with northern Alaska $67,895.29, license fees in Alaska, were received at the Treasury Department and transferred to the credit of the Secretary of the Interior for school purposes. This unexpectedly large sum received so near the end of the fiscal year enabled the Department to settle all outstanding claims against the school fund, so that at the close of the year it was free from debt. It also provided for the opening of schools at a number of places where repeated requests for schools had been made, which heretofore it had

been impracticable to grant because of the inadequacy of the funds available for school purposes.

The new schools opened in the fall of 1903 are: Wainwright and Deering, Arctic Alaska; Ikognute, Nulato, Rampart, and Fort Yukon, in the valley of the Yukon River, and Bettles, on the Koyukuk River, the largest of the northern tributaries of the Yukon; Bethel No. 2, Ougavig, and Nushagak, in southwestern Alaska; Chignik, on the south shore of the Alaska Peninsula; Seldovia, Kenai, and Hope, on Cook Inlet; Seward, on the east coast of Kenai Peninsula; Haines No. 2, Tee Harbor, Petersburg, and Shakan, in southeastern Alaska. The expense of these new schools will be included in the current year's expenditure.

New school buildings are in process of erection at Point Barrow, Wainwright, and Kotzebue, Arctic Alaska; Wales and St. Michael, on Bering Sea, and Copper Center, 105 miles north of Valdes, on Prince William Sound.

At Bettles a log house was purchased and made over into a school building and teacher's residence.

Reindeer in Alaska.—In prior years reindeer were purchased in Siberia under various Congressional appropriations, brought into the district of Alaska, and distributed to various points where mission schools were maintained by independent religious denominations. It was necessary to make use of all these schools throughout the district because they represented the only organized communities of a permanent character in the sparsely settled districts in which confidence could be placed. In some instances, however, it was difficult to secure the consent of the missionary societies maintaining schools to receive any reindeer at all or agree to have their pupils instructed in reindeer training. Agreements were made with the persons controlling the mission stations whereby the latter received a number of reindeer to be used in connection with the teaching of the school children, to be returned in good condition to the Government at the expiration of a stated number of years, the mission to receive as its personal property the increase from the time the animals are in its possession.

From native scholars attending these mission schools are selected those deemed most desirable for instruction as reindeer herders; the mission provides the natives so selected with food, clothing, and educational facilities, the Government providing a reindeer herder to instruct the natives in caring for and breaking in the deer. These students, as a reward of merit, receive at the expiration of a number of years a certain number of reindeer, which they are required to keep with the herd belonging to the Government at the mission for a stipulated number of years, the increase thereof becoming their personal property to aid them in after years in maintaining a livelihood. During the past year it has been found impracticable to import any more

reindeer from Siberia, and in establishing new herds in new sections of the district it has been necessary to buy a few deer from the missions or the natives, the animals being the offspring of deer originally purchased by the Government. At the present time the number of reindeer in the district of Alaska is such that, with the increase thereof, it is not believed that it will be necessary to purchase any more deer from Siberia.

The following table shows the herds now at the various mission stations which have been loaned under the above conditions:

	Number loaned.	In herd, 1902.	When loaned.	When due.
Presbyterian, Point Barrow	100	.....	Sept., 1898	Sept., 1903
Presbyterian, St. Lawrence Island	70	150	July 30, 1900	July, 1905
Norwegian Evangelical Lutheran, Teller	100	221	Sept. 1, 1900	Sept., 1905
Roman Catholic, Nulato	100	151	Mar., 1901	Mar., 1906
Moravian, Bethel	88	188	Feb. 26, 1901	Feb., 1906
Moravian, Carmel	88	188	.....do.....	Do.
Friends' Mission, Kotzebue	95	160	Sept. 2, 1901	Sept., 1906
Swedish Evangelical, Unalakleet	100	100	1903	1908
Total	741	1,158		

The following table shows the herds loaned to Lapps under an agreement for five years, they to act as reindeer teachers to the natives and to receive no compensation for their services other than the increase of the herd, the original number loaned to said Lapps to be returned to the Government at the expiration of the contract period:

Annual loan of herds to Laplanders.

	Location.	Year.	Males.	Females.	Total.
Ole Olesen Bahr	Eaton	1901	25	75	100
Nils Persen Sara	Kuskokwim	1901	25	75	100
Per Matthisen Spein	.....do.....	1901	25	75	100
Alfred Salmonsen Nilima	Kotzebue	1901	24	75	99
Nils Klemetsen	Golofnin	1902	25	75	100
Total			124	375	499

The total number of reindeer in the district of Alaska belonging to the Government may be stated approximately to be 2,242, divided as follows: Loaned to mission stations to be used in connection with their schools and returned to the Government, 741; number loaned to Laplander instructors in the management of reindeer, and to be returned to the Government, 499; two herds of 300 each now en route to Bettles and Copper River new station, 600; deer at Teller, Unalaklik, and Bettles, 402.

Reports have been received from all the reindeer stations of Alaska, except those at Barrow. These reports show that on the 30th of June, 1904, there was a total of 8,006 domestic reindeer in the district, of which number 2,482 were fawns born during the spring of this year.

In view of the failure of the annual mail and food supplies to reach Barrow in the fall of 1903, an additional reindeer station was established at the southern edge of the summer ice fields on the Arctic coast, Wainwright Inlet. Mr. John H. Kilbuck, of Kansas, was placed in charge of the new station, and last summer building material and supplies were forwarded to that point. Building material was also forwarded for the second new reindeer station to be established in the neighborhood of Hope, midway between Bering Strait and Point Barrow. The above stations will be of much assistance in operating the winter reindeer mail route, which has been established by the Post-Office Department at Washington, between Kotzebue and Barrow, a round trip of about 1,500 miles above the Arctic Circle. The reindeer herd at Barrow was divided into three herds, one remaining at Barrow, the second being sent to Wainwright, and the third to Point Hope, the three places being on the Arctic coast.

With the rapid increase of the herds arrangements have been consummated for the establishment of two new central stations—the one at Bettles, in the interior of Alaska, north of the Arctic Circle, on the Koyukuk, the great northern tributary of the Yukon River, and 720 miles to the eastward of Nome; the other at Copper Center, about 105 miles north of Valdes, on Prince William Sound.

During the past winter the United States mail was carried with reindeer between Teller and Wales, a round trip of 150 miles, between Teller and Igloo, a distance of 60 miles each way, and between Kotzebue and Barrow, a distance of 750 miles each way. These three mail routes are all in northwest Alaska. Freighting with the reindeer was done at several of the mission stations for miners and others, and a few of the miners purchased and used reindeer for packing and sledding on their prospecting expeditions.

AGRICULTURAL AND MECHANICAL COLLEGES.—By the act of Congress approved August 30, 1890 (26 Stat. L., 417), a continuing appropriation was made "for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts," established in accordance with the provisions of an act of Congress approved July 2, 1862. The said act of August 30, 1890, appropriated to each State and Territory for the year ending June 30, 1890, the sum of $15,000, and an annual increase of the amount thereafter for ten years by an additional sum of $1,000 over the preceding year, until the appropriation reached the sum of $25,000, which should then be the amount to be appropriated annually to each State and Territory. The act provided that these amounts should be paid out of the proceeds arising from the sales of public lands, but this limitation as to the source of the funds was removed by the acts of Congress approved May 17, 1900 (31 Stat. L., 179), June 17, 1902 (32 Stat. L., 388), and February 7, 1903 (32 Stat. L., 803), in each of which acts it

is provided that if at any time the proceeds arising from the sales of public lands shall be insufficient to meet the payments authorized by the act of August 30, 1890, the deficiency shall be paid by the United States out of any money in the Treasury not otherwise appropriated.

The said act requires annual reports to be made to the Secretary of the Interior by the treasurers and presidents of the institutions receiving the benefits thereof and imposes upon the Department the duty of ascertaining whether the respective States and Territories are entitled to receive the annual installments of the fund.

The act also provides that the funds authorized thereby shall be expended only for instruction in certain branches of study named in the act and for the facilities for such instruction; as it does not specify, however, the amounts that shall be expended for each subject, but leaves the apportionment of the funds among the subjects to the several institutions entitled thereto, it follows naturally that there is a great difference in the amounts expended for the several subjects in the several States. A summary of the reports of the treasurers of the several institutions for the year ended June 30, 1903, shows the expenditure of the funds for that year to have been as follows: For instruction in agriculture, 16.1 per cent; mechanic arts, 27.9 per cent; English language, 12.3 per cent; mathematical science, 12.9 per cent; natural and physical sciences, 24.7 per cent, and economic science, 6.1 per cent.

The reports of the presidents of these institutions for the year ending June 30, 1903, show a total attendance in all departments of 50,799 students, of which number 6,080 were enrolled in institutions for colored students. Excluding the latter, there were in the college departments of agriculture and mechanic arts 18,147 students, and in short or special courses, 4,894. The students in the regular college classes were pursuing courses as follows: Agriculture, 2,337; horticulture, 68; forestry, 66; mechanical engineering, 3,869; civil engineering, 2,371; electrical engineering, 2,314; mining engineering, 954; chemical engineering 154; railway engineering, 6; sanitary engineering, 20; textile engineering, 119; general engineering, including some first year engineering students, 534; architecture, 194; household economy, 637; chemistry, 570; general science, 1,310; other courses, 2,624.

The students in short courses were as follows: Agriculture, 2,982; horticulture, 125; dairying, 755; mechanic arts, 1,434; household economy, 470; mining, 30; forestry, 84.

The number of students in the institutions for colored students enrolled in the various industrial courses was as follows: Agriculture or farm work, 1,680; carpentry, 720; machine-shop work, 178; blacksmithing, 388; shoemaking, 112; broom making, 8; wheelwrighting, 122; bricklaying, 190; painting, 133; printing, 104; harness making, 9; tailoring, 161; plastering, 139; sewing, 1,693; cooking, 444; laundering, 624; nursing, 25; millinery, 99.

The value of all property held for the benefit of the institutions is $71,854,796. Of this amount, $29,096,619 is invested in interest-bearing securities, $4,504,486 represents the value of unsold lands granted under the act of July 2, 1862, and the remainder, $38,253,691, represents the material equipment of the institutions. Of the entire sum, $11,213,593, realized thus far from the sale of the lands granted under the act of July 2, 1862, but $402,556, or a little more than 3.5 per cent, is held for the benefit of separate institutions for colored students. In only four States, Kentucky, Mississippi, South Carolina, and Virginia, do the institutions for colored students share in this fund.

The total income, excluding the United States appropriation for experiment stations, amounted to $9,555,951, an increase of $388,892 over that for the preceding year. Of this increase more than $300,000 was furnished by the States and Territories. The sources of the income were as follows: Federal, $2,018,470; States and Territories, $4,554,612; other endowments, $603,853; fees, $1,245,790; miscellaneous, $1,133,226.

Among the legislation of a permanent character in behalf of these institutions enacted during 1903 may be mentioned the following: Indiana raised the tax levy to 1 cent on each $100 of taxable property and New Mexico to forty one-hundredths of a mill on the dollar, Oregon provided for a tax levy to raise $25,000 annually, and Wisconsin for a levy to raise $48,500 annually in addition to an annual levy of $289,000 heretofore provided for.

The total amount paid out by the General Government to the several States and Territories from the passage of the said act to and including the installment paid for the year ending June 30, 1905, is $16,402,000.

RECORDS OF THE SEVERAL CENSUSES FROM 1790 TO 1890, INCLUSIVE.

The supervisory powers relating to the acts of United States marshals and others in taking and returning the Federal census were vested in the Secretary of the Interior by the act of Congress approved March 3, 1849 (9 Stat. L., 395), creating the Department. Prior to that time such powers were exercised by the Secretary of State. Such of the records pertaining to the several censuses from 1790 to 1840, inclusive, were accordingly transferred by the Secretary of State to the Secretary of the Interior upon the organization of the Interior Department in 1849, and thereafter, as the work of the several decennial censuses from 1840 up to and including 1890 was completed, the records and schedules thereof were turned over to the Secretary of the Interior. The original population schedules from 1790 to 1820, inclusive, numbering 193 volumes in all, are bound. The population schedules of the censuses from 1820 to 1880, inclusive, are also bound,

and number 4,431 volumes; in addition, there are a number of records, books, and papers containing evidence of payments to census employees and others connected with the census work, and the correspondence relative thereto, which make approximately 1,000 volumes.

By the act of March 2, 1895 (28 Stat. L., 857), Congress abolished the Office of the Eleventh Census, and provided that the unfinished work thereof should be completed in the office of the Secretary of the Interior. Thereafter a careful examination was made of the records of the censuses prior to the eleventh, and a schedule thereof prepared, and as a result of such examination it was ascertained that the original population schedules of the inhabitants of the following States and Territories for the several decennial censuses indicated were missing from the files of the Department, to wit: Census of 1790: New Jersey, Delaware, Virginia, Kentucky, Georgia, Territory Southwest of Ohio River and Territory Northwest of Ohio River. Census of 1800: New Jersey, Virginia, Georgia, Kentucky, Tennessee, Mississippi, Indiana Territory, and the Territory Northwest of Ohio River. Census of 1810: New Jersey, Ohio, Tennessee, Georgia, Michigan, and the Territories of Mississippi, Indiana, Illinois, and Louisiana. Census of 1820: Alabama, New Jersey, Indiana, Illinois, Rhode Island, South Carolina, and the Territories of Arkansas, Michigan, and Missouri.

Correspondence was had with the heads of the several Executive Departments at Washington, with the governors of the several States above mentioned, and, through the Department of Justice, with the clerks of the courts in said States with a view to ascertaining the whereabouts of the missing volumes. None of the missing volumes, however, have been recovered, and it has been impracticable to procure any information regarding them.

By the act of February 14, 1903 (32 Stat. L., 825), creating the Department of Commerce and Labor the Census Office was transferred from the supervision of the Secretary of the Interior to that of the Secretary of Commerce and Labor. The formal transfer of the Census Office, under the provisions of section 13 of the act of February 14, 1903, supra, became effective July 1, 1903. Thereafter the population schedules of the Eleventh Census (1890) were removed from the place where they had been stored in the Union Building on G street, between Sixth and Seventh streets, northwest, in this city, and transferred to the custody of the Director of the Census.

The population schedules from 1790 to 1880 are the originals, showing by name the individuals composing the population of the several States and Territories during each census decade, and containing data which had never been published, and, if mutilated or destroyed, can never be duplicated. These schedules were, therefore, not turned over to the Census Office in July of 1903, for the reason principally that the building leased for the use of that Office, and to which it was

proposed to remove them was not fireproof. They were accordingly retained, with the assent of the Secretary of Commerce and Labor, in the Patent Office building, which is fireproof, until they could be suitably provided for elsewhere.

On the 25th of June, 1904, the Secretary of Commerce and Labor advised the Department that a fireproof vault had been provided in the Census Bureau for the accommodation of the census records, and thereafter, prior to July 1, 1904, all the records and papers pertaining to the several censuses from 1790 to 1880, inclusive, then in the custody of the Secretary of the Interior, were transferred to the Director of the Census.

During the year the schedules of the 1790 and 1800 censuses were fully paged, arranged, indexed, and repaired, and considerable progress made in similar work on the schedules of 1810 and 1820. The haphazard manner in which these old schedules were originally arranged and bound, coupled with the fact that frequent reference to books and maps in the Congressional Library became necessary to obtain reliable information of the municipal subdivisions of the country in 1810 and 1820, precluded the possibility of rapid progress in the work.

The necessary care and attention required to prevent deterioration of the valuable original manuscript records of the population of the country from 1790 to 1880, inclusive, was given, and information compiled therefrom supplied to a large number of applicants throughout the United States for court and other purposes. Much interest has been manifested by the people in these original documents, and a large number have made personal examination of the schedules at the Department.

PUBLIC DOCUMENTS.

The report of the chief of the document division of the Department, submitted in compliance with the provisions of section 92 of the act approved January 12, 1895 (28 Stat. L., 623), shows that during the last fiscal year publications of the Government were received and distributed by the several offices and bureaus of the Department as follows:

	Received.	Distributed.
Office of the Secretary	62,042	65,977
Patent Office	433,632	449,045
General Land Office	689,450	705,372
Pension Office	2,500	6,710
Office of Indian Affairs	29,321	18,675
Office of Commissioner of Railroads	600	400
Bureau of Education	56,003	57,859
Geological Survey	902,235	826,725
Total	2,175,783	2,130,763

Four hundred and eighty copies each of volumes 189 to 193 of United States Reports were during the fiscal year received and distributed by the Department in compliance with the provisions of sections 681 and 683 of the Revised Statutes and of acts of February 12, 1889 (25 Stat. L., 661), and July 1, 1902 (32 Stat. L., 630). In addition, 10,424 volumes of United States Reports published by the Banks Law Publishing Company and 46 sets of Russell and Winslow's Syllabus Digest of the same, together with 26 volumes of Reports and 27 sets of Digest, published by the Lawyers' Cooperative Publishing Company, have to date been purchased by the Department and distributed under the provisions of the act of July 1, 1902.

Under the provisions of section 5 of said act, which requires the Secretary of the Interior to distribute at the first session of each Congress to each Senator and Representative who may apply in writing for the same, copies of the Revised Statutes and of the supplements thereto, for his own personal use exclusively, 34 copies of the Revised Statutes of the United States and of volumes 1 and 2 of Supplements thereto, have been delivered to Senators and 235 to Representatives. Inasmuch as this Department is obliged to purchase these volumes from the Superintendent of Documents, Government Printing Office, it would seem better that they be delivered directly to Congress by that officer than to transfer them to this Department for delivery. I therefore recommend that the law be amended to this effect.

At the date of my last report it was expected that the maps of the United States, edition of 1902, prepared by the General Land Office, for the reproduction of which a contract had been made with Messrs. Guggenheimer, Weil & Company, of Baltimore, Md., would be ready for delivery early in the present year. Unfortunately, however, the entire plant of the contractors, including lithographic stones and all partially completed maps, was destroyed in the Baltimore fire of February last, only 182 copies of the map having been received by the Department. After due advertisement a contract was entered into June 29, 1903, with the Friedenwald Company, of Baltimore, Md., the lowest bidder for the reproduction of the map of the United States corrected to 1903, and said firm has satisfactorily completed the publication of the entire edition ordered. Of the 30,600 copies of this map received by the Department, 7,200 have been delivered to the folding rooms of the Senate, for distribution by Senators, and 14,400 to the folding rooms of the House, for distribution by Representatives and Delegates. The remaining copies are held for sale and for the official use of the Department. The price of this fine wall map, mounted on sticks ready for use, has been fixed by act of Congress at $1 per copy.

On June 6, 1904, a contract was entered into with R. F. Bartle & Co., of Washington, D. C., for bringing the copper plate base map of the United States down to June 30, 1904, and the work was satis-

factorily completed. Pursuant to authority contained in the act making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30, 1904, and for other purposes, approved February 25, 1903, wherein, among other things appropriation was made for the making, furnishing, and delivering of connected and separate maps of the United States and other maps prepared in the General Land Office; and pursuant to authority contained in the joint resolution of Congress approved March 28, 1904, wherein the unexpended balance of the appropriations made for the United States and other maps in the acts of April 17, 1900, and March 3, 1901, was made available for expenditure during the fiscal years 1904 and 1905 for a further edition of the United States map of 1904, and, after due advertisement, contract was entered into under date of June 9, 1904, with Rebecca Restein, doing business as E. P. & L. Restein Company, of Philadelphia, Pa., the lowest bidder, for the printing and delivering of 63,000 copies, more or less, of the map of the United States, 1904. The work under this contract is well under way, and will doubtless be ready for delivery early in 1905.

The sum of $4,154.88 was received from the sale of documents during the year by the office of the Secretary, and $11,099.75 by the United States Geological Survey.

OFFICE OF RAILROAD AFFAIRS.

By act of March 3, 1903 (32 Stat. L., 1119), it is provided "that the office of Commissioner of Railroads is hereby continued until the 30th day of June, 1904, when same shall terminate and the duties of the Commissioner shall be transferred to the Secretary of the Interior with the records and files of the office."

In view of this legislation I, on June 30 last, issued an order assigning the records and files of the office of the Commissioner of Railroads to the Lands and Railroads Division and directed that any business relating to the duties heretofore performed by the Commissioner of Railroads should be presented for the action of the Secretary through that division.

THE TERRITORIES.

Alaska.

The governor of Alaska, John G. Brady, in his report treats generally of the conditions existing in the district during the year and calls special attention to the providing of adequate transportation facilities, the enacting of legislation that will encourage the homeseeker to avail himself of the District's resources and the authorizing by Congress of a Delegate to look after Alaska's interests.

The total population of Alaska, according to the census of 1900, was 63,592, of whom 45,872 were males and 17,720 females; the total white population was 30,507. Great changes have occurred since 1900. New discoveries of rich placer ground have been made and a new town, known as Fairbanks, has in consequence sprung into existence. Several small towns along the Yukon River have been almost deserted. Work in the older mining camps is now on a steady basis and much of the population in these camps migrate with the seasons, moving north in the spring and south when the water begins to freeze in sluice boxes in the fall. The governor estimates the white population at this time at 26,550. In discussing the matter, he states:

This is a disappointment and will provoke much criticism. Those who have steadily maintained that the number is more than four times greater, can produce their estimates for comparison. There is no criticism to be made on the character of the population, save only that it is made up too little of families and groups of families. For intelligence, bravery, and endurance it is much above the average of any State. The conditions have not been inviting to the weak and infirm. An influx of good New England girls would be a very acceptable addition to our numbers.

Many will wonder why the population is so small. A number of causes may be assigned: First. The large area that was called the frontier was more accessible and inviting to every class of immigrants. Second. The absence of any definite and reliable information concerning the country and its possible resources. Third. The neglect and positive negative legislation by Congress in refusing to allow a Delegate, the extension of the homestead and other land laws. All these and other things combined have made an immense and almost permanent barrier along the way of Alaska's advancement. It is the plain truth that to-day the country is possessed by a small abiding number of people. Alaska needs people. Her resources are ample to engage millions and to sustain them in comfort and luxury. Congress is awakening to a sense of duty. A great step forward was taken March 3, 1903, by the extension of a liberal homestead law allowing 320 acres to each bona-fide settler.

There has been no marked change in the native population during the past year. The Thlingits, Hydahs, and Tsimsheans of southeastern Alaska are adjusting themselves rapidly to civilized life, and for the most part are a vigorous lot of people. Some communities have been worsted by the vices which they have taken on from the whites, but most of them have now passed the severe state and are beginning to increase slowly. The Aleuts have no doubt decreased some, for it has been difficult for them to turn from a hunting state to the faithful, prompt, and sober ways required in the canneries and in the mines. On the Yukon, Tanana, and Copper rivers there has been no noticeable increase. The Eskimos on the Yukon delta and to the northward have probably held their own since their terrible affliction four years ago. There has possibly been a small increase in the whole number of natives since the census of 1900.

Transportation facilities throughout northwestern and eastern Alaska continues to be a great problem. In southeastern Alaska and on the seacoast, where nearly all places can be reached by seagoing vessels, the matter is a very simple question. Railroad building should be encouraged and wagon roads constructed. As yet not a single good wagon road penetrates Alaska at any point; the supplies for the mining camps in the interior are laboriously carried on the backs of natives,

mules, or horses over rudely constructed trails which are full of dangers. The difficulties of transportation add materially to the cost of the necessaries of life. As an instance, it is stated that at Slate Creek, only 200 miles from Valdez, on tide water, the freight charges on supplies brought in over the trail are from 88 cents to $1 per pound. At Fairbanks and other points, which in summer can be reached by stern-wheel steamers of light draft, the rate of freight is somewhat less, though even in these places the cost of supplies is excessive.

Some railroad construction has commenced; a standard-gauge road has been constructed from the cannery at Yakutat to Setuk River, a distance of 9 miles, and a road in all likelihood will be extended 40 miles to Dry Bay, where the Alsek River empties on the sandy beach. This will open up a considerable amount of land capable of settlement. At the head of Resurrection Bay, at Kenai Peninsula, the Alaska Central Railway Company has built a substantial wharf at which ocean vessels can land. The beginning of a standard-gauge road is on this wharf, and it runs thence along the shore of the bay up a valley toward Kenai Lake. Eleven miles of the road have been completed and is in operation; 4 miles of grading has been completed and a right of way cleared to the lake, which is about 25 miles from Seward, the town which has been laid out near the wharf site. It is the purpose of this company to continue its road up the peninsula and across Turnagain Arm, and advance along Knik Arm, to tap an available coal deposit and continue the construction thence toward the Tanana River.

In the bill making appropriations for the Army, approved April 23, 1904, an appropriation of $25,000, to be immediately available, was made for a survey and estimate of the cost of a wagon road from Valdez to Fort Egbert (Eagle) on the Yukon River. This work was assigned to Maj. John Millis, of the Engineer Corps. A large number of surveyors and assistants with necessary outfits of pack animals and supplies were sent to Alaska, and the work authorized was finished in the early part of September. As the statute requires that this estimate be submitted to Congress at the earliest practicable day, it will doubtless be forwarded to that body early in the present session and will enable it to determine correctly whether it is advisable to build wagon roads or railroads in the district.

The agricultural possibilities of the district have been clearly demonstrated, not only by the effective results obtained through private enterprise but from the several agricultural experiment stations therein. Wheat, rye, oats, and barley have been planted and harvested. Flax yields good crops, potatoes are plentiful, and vegetable gardens have been uniformly successful. Currants, gooseberries, and raspberries have been cultivated with success, and native berries are abundant. At the Sitka Experiment Station special attention is now

paid to the propagation of hardy fruit-bearing trees and shrubs, and the superintendent of the station announces that he has many thousands of plants ready for distribution throughout the Territory. In central and southern Alaska the summer of 1904 was one of excessive rainfall and low temperature. At none of the stations was there an entire failure of the season's work. At Sitka the trees and shrubs grew; at Copper Center oats matured; at Rampart. on the Yukon River, oats, rye, and wheat matured and were harvested.

On account of scarcity of water in the interior of Alaska the past summer may be said to have been the worst mining season that Alaska has experienced since mining began. The center of greatest interest was the Fairbanks district; the other mining towns on the Yukon and its tributaries have been almost deserted for this newest gold field. The total output of the placer mines in the Fairbanks, Seward, Copper River, Koyukuk, Sushitna, Forty-Mile, and Kenai districts is estimated at $9,200,000. The total output of the extensive stamping mills on Douglas Island, in southeast Alaska, is estimated at $2,981,274. Investigations in the vicinity of Cape York, near Bering Strait, prove that the deposits of tin in that region are extensive. It is the opinion of men who have visited Cape York that in a few years the product of these mines will supply the demand for tin throughout the United States. The copper mine at Ellamar, on Prince Williams Sound, has produced 20,000 tons of ore during the year. The building of a railroad into the Copper River Valley will cause the development of vast deposits of copper ore along that river and its tributaries. Coal mining near Kayak, on the southern coast, has given gratifying results. One company states that it has a vein of semianthracite coal 75 feet in thickness; other veins 40 and 12 feet thick are mentioned. The outlook for the development of the oil wells also in the Kayak district is promising; the investigators have not as yet made public the results of their labors that promise great things.

Each of the three judicial districts of Alaska covers a great area of territory, and the time of each of the district judges is fully occupied in looking after the affairs of the permanent settlers in his district. On the shores of Bristol Bay, the Kenai Peninsula, and Cook Inlet there are during the summer many thousands of persons connected with the canneries, a motley array of many nationalities, among whom crime is frequent. The United States commissioners and deputy United States marshals stationed at these places, having no force at hand to sustain them, are powerless to carry out the law. As a remedy Governor Brady recommends that a fourth judicial district be created to include this coast region, and that said district be furnished with a seagoing steamer equipped with Gatling guns and ammunition, and that it be placed under the custody of the marshal and at the com-

mand of the court. This vessel could patrol these distant regions and maintain a wholesome respect for law and order.

Attention is called to the inadvisability of the continuance of the present fee system of compensation to commissioners and marshals. In Alaska the powers of commissioners are considerable. As justices of the peace they try civil cases when the amount involved is $1,000 or less; they sit as committing magistrates; they have full authority as probate judges; they act as coroners, notaries, and recorders of precincts. The fee system, the governor states, as practiced in these commissioners' courts, "is an abomination" and works against the public peace and welfare; he urges that the fee system be abolished and that the commissioners and marshals be supported exclusively by salaries.

In prior annual reports attention has been invited to the advisability of relieving the judges of the court of the duty now imposed upon them by law of collecting license fees for conducting business by individuals, corporations, etc. Their time is fully occupied in connection with their legitimate court duties and they should not be burdened with a matter of this character. It is strictly in line with the duties of the Internal Revenue Bureau of the Treasury Department, and the governor renews the recommendations heretofore made, that the collection of this license money be performed under the supervision of the Secretary of the Treasury.

The governor also directs attention to the necessity for amendment of existing law so as to grant considerable latitude to the customs officials in Alaska in enforcing laws regarding steamboat inspection. It frequently happens that steamers in Alaskan waters are deserted by their engineers; other men may be ready and competent to take their places, but can not do so because they have no license, nor can they be examined and secure license, because there are no inspectors within reach. The customs officials have no discretion at the present time, but must enforce the law. As a result, expeditions are frequently broken up and the projectors sometimes suffer great loss.

The Bering Sea patrol is exacting and has been well performed by vessels of the Revenue-Cutter Service. The governor makes grateful acknowledgment of the hard work done by the officers and men of the cutter *Rush* in securing, in the course of its cruising in the waters of Alaska, a large number of totem poles and native buildings obtained for exhibition at the Louisiana Purchase Exposition.

The salmon-canning establishments in southeast Alaska and along the southern shore are reported to have done well, but in the Bering Sea region the catch fell below that of last year. The enactment of laws which will foster this valuable resource by the establishment of salmon hatcheries, conducted by Government officials, is regarded as important to the interests of the Alaska people.

The Light-House Board of the Department of Commerce and Labor has accomplished considerable work in Alaska. The Thirteenth light-house district comprises Oregon, Washington, and all of Alaska. The commercial interests of the district are such that the governor believes that a fourteenth district should be created, to include Alaska only.

Special attention is directed to the completion of the Alaskan cable system from Seattle to Sitka, Juneau, Skagway, and Valdez, connecting with Government telegraph land lines through the famous Fairbanks and Tanana mining districts, thence to the wireless telegraph between St. Michaels and Nome, which brings all tributary points throughout Alaska in close touch with the rest of the world. The governor states that the achievement of the Signal Corps of the Army in thus extending telegraphic communication through the heart of the country and completing cable connections with Puget Sound deserves the highest commendation.

Mention is made of the extension of the Alaska school service and the growth of the enterprise of stocking northwestern Alaska with reindeer, both of which enterprises are under the control of the Bureau of Education. During the past year there were in Alaska 35 United States public schools. In addition to the above, 19 new schools were established during the summer of 1904. The number of reindeer is 8,194; 2,435 are this year's fawns.

An interesting tabulated statement covering specific and detailed classification of merchandise, showing the status of the commerce of Alaska, is included in the report of the governor. It shows as follows: Domestic merchandise shipped from the United States to Alaska from the customs districts of Oregon, Puget Sound, and San Francisco to the value of $9,869,721, of which $7,284,193 was carried in American steam vessels and $2,585,528 in American sailing vessels. The shipments of domestic merchandise from Alaska to the United States was of the value of $10,100,181. The shipment of gold and silver coin from the United States to Alaska amounted to $61,570, and the shipment of coin from Alaska to the United States amounted to $23,504. The total shipments of gold and silver from Alaska to the United States aggregated in value $14,907,628.

The imports of merchandise into Alaska from foreign countries were of the value of $607,463 and the exports to foreign countries were $1,547,290.

Section 32 of the act of June 6, 1900, prescribing a civil code for the district of Alaska, provides that the fees received for certificates issued to members of the bar and for commissions to notaries public shall be set aside to be disbursed on the order of the governor in maintaining the District Historical Library and Museum. The moneys received from this source and available during the year aggre-

gated $3,697.77, of which $1,198.21 was expended, leaving an available balance of $2,499.56.

Six hundred and seventy-nine volumes were added to the library during the year, of which 564 were donated by the various executive branches of the Government and 115 were received from the several States. Many of these volumes are historical in character. Much interest is manifested in this library and the accessions thereto are increasing yearly. The entire collection has not yet been fully catalogued, but the matter will be taken up and completed at an early day.

ALASKA INSANE.—Pursuant to section 2 of the act of June 6, 1900, making further provision for a civil government for Alaska (31 Stat. L., 322) a contract was entered into with the sanitarium company of Mount Tabor, near Portland, Oreg., for the care and custody of the Alaskan insane for the year commencing January 15, 1904, at the rate of $360 per annum for each patient received. There have been received during the current fiscal year under the terms of the said contract 56 patients, of which number 4 have been discharged as cured, 2 died, and 1 escaped.

By the act dated April 28, 1904, the act of June 6, 1900, above mentioned, was amended, so as to require the Secretary of the Interior, in the month of November, 1904, and from time to time thereafter, to advertise for and receive bids for the care and custody of the Alaskan insane for one or more years. In accordance therewith, an advertisement has been prepared inviting proposals for the care of such insane from and after January 15, 1905, the date of the expiration of the existing contract, which will be opened December 15, 1904. Such advertisement is now appearing in the various newspapers selected for the purpose.

An appropriation in the sum of $50,000 for the Alaskan exhibit at the Louisiana Purchase Exposition was made by the act of Congress approved March 3, 1903, and the governor was designated by the Secretary of the Interior as Executive Commissioner. Under this appropriation a suitable and sightly building was constructed at St. Louis, in which has been maintained a most creditable exhibit of the products and resources of Alaska. Appended to his report is the official catalogue of the Alaskan exhibit, which fully describes the building and its contents and also embodies interesting statistical information in relation to the district. A detailed description of this exhibit will be found on pages 249–251 of this report.

The act of March 3, 1879 (20 Stat. L., 477), provides that—

> authority be, and is hereby, given to the Secretary of the Treasury to lease, at his discretion, for a period not exceeding five years, such unoccupied and unproductive property of the United States under his control, for the leasing of which there is no authority under existing laws, and such lease shall be reported annually to Congress.

Under this statute the Secretary of the Treasury leased certain islands in southern and southwestern Alaska to be used for the propagation of foxes. The act of May 14, 1898 (30 Stat. L., 409), extending the homestead and certain other public land laws to Alaska, in express terms excludes from the operation of this provision "the islands leased or occupied for the propagation of foxes." Subsequently to the passage of this act the Secretary of the Treasury and the Secretary of the Interior considered the question of supervisory authority over these islands, and the conclusion was reached that neither Department had jurisdiction over the leasing of said islands (17 L. D., 417). Thirty-three of the islands in Alaska are now occupied for fox-breeding purposes by persons who have made considerable investments in the business. It is stated that these persons claim that the action of the Government in leasing the islands induced them to embark in the business and make their investments, and that they are disposed to retain possession of the islands from other persons.

The situation and conditions regarding these islands are fully set forth in my last annual report, and in again directing your attention to the matter I desire to suggest that, if this industry is regarded as worthy of being fostered, Congress should enact some law authorizing the use of unoccupied and unproductive islands in Alaska for this or kindred purposes, preferably placing the matter under the supervision of the Secretary of the Interior.

In prior annual reports I have adverted to the fact that many cases of destitution and disease existed among the natives of Alaska and recommended that relief be extended by Congress through the medium of adequate appropriations to be expended under the supervision of the Secretary of War, the War Department having better facilities, through the medium of the various officers on duty in the district, for the dispensing of the Government's charity than this Department.

During the past year reports were received indicating the existence of destitution among the Copper River Indians near Copper Center, Alaska, and upon the matter being brought to your attention the War Department, by your direction, issued instructions to the commanding officer of Fort Liscum, Alaska, to ship to Copper Center 10,000 rations, or such number as might be found necessary for the relief of destitute Copper River Indians. In again directing attention to this matter I desire to urge the early consideration thereof by Congress and the enactment of such legislation as will afford relief to these wards of the nation.

In concluding his report the governor, in discussing generally the conditions existing in Alaska and the legislative needs of that section of the country, states that:

> We are graduates from the school of patience. We have learned to wait. We expect that a law allowing the district a Delegate will be passed during the coming

winter, and that it will not be loaded with any odious provisos. The majority of the people would prefer to elect such an officer, but there are many who would be satisfied or perhaps prefer that the law should require the President to appoint a bona fide resident of at least two years to act as Delegate, and thus avoid the expense and strife and confusion of an election. Whatever Congress in its wisdom gives us we will accept; but of one thing there can not be any doubt, namely, that the district needs an authorized agent at Washington during the sessions of Congress to look after its affairs. If the lobby that assembles each year continues as large and as conflicting Congress will have to grant the Delegate in self-defense. Members of Congress, in discussing measures in behalf of Alaska, should not forget the fact that although Alaska produces great wealth each year this wealth does not remain in the Territory. The great fortunes which were made out of the fur industry did not remain in Alaska, but went to California and eastern cities. The profits of the salmon canneries do not remain in Alaska. The dividends of the Treadwell mines are not distributed in Alaska; they are paid in London. The successful placer miners, who, in the aggregate, take out millions of gold, do not hunt up enterprises in the Territory for investment. Nearly every dollar of it finds its way south in the fall and seeks investment in other places. The people who live in Alaska and make it their home are relatively poor.

The country year by year is drained of its wealth. If all this wealth could remain in the district like the annual increase of wealth remains in a State—for instance, like Missouri—there would be capital for enterprise and for taxation. Legislation that will encourage the home seeker and home builder is what is needed. The first step has been taken by the passage of the liberal homestead law more than a year ago. The homesteaders have not been able to take advantage of this law on account of the high price for transportation to the great river valleys where the settlers would like to go. It requires railroads to open up Alaska for the thousands of good, hardy Americans who are ready to enter and occupy it. If three lines of railroad are built from the ports on the southern border across to Yukon River an industrious, wide-awake American population will follow them as they build, and by dint of hard work will produce results equal to any that we have seen on the western frontier. Congress can make no mistake in preparing Alaska for our own people, who are becoming anxious to enter and possess it. The unfinished measures which are now before it are mainly along this line, but they are not adequate for the immediate opening of the country.

ARIZONA.

The report of the governor, Alexander O. Brodie, presents in an interesting manner valuable information covering the affairs of the Territory and its varied industries. Arizona has an area of 113,000 square miles, its extreme breadth being 335 miles and its extreme length from north to south 390 miles.

There has been considerable increase in the population of the Territory during the past year, noticeably so in the mining districts. The total population is now estimated to be between 165,000 and 170,000. Arizona was organized as a Territory February 24, 1863. The population in 1870 was 9,658; during the ten years from 1870 to 1880 it increased 30,782, or 318.7 per cent, making a population at that time of 40,440. In 1890 the population was 59,620, an increase during the decade of 19,180, or 47.4 per cent. In 1900 the census gave the Territory a population of 122,212.

The surface of the Territory consists of elevated table-lands intersected by mountains and interspersed by valleys, many of which are of vast extent; these are exceedingly fertile, and when brought under cultivation will give marvelous returns in grain, fruits, and other products of the soil.

Mining, agriculture, and stock raising are the chief industries in the Territory. During the past year there has been marvelous advancement in mining operations, the production of copper being greater than in any previous year. Agriculture, however, has not advanced much, owing to the scarcity of water in streams, caused by light snowfalls in winter and almost complete deprivation of rains. The live-stock industry has suffered, perhaps more than any other, thousands of cattle having died during the latter months of the year.

Not only agriculture, but mining, stock raising, and all other industries depend upon rain and snow for success. Water storage, therefore, is the only safe plan in the arid sections, and until dams are constructed and the flood waters stored the farmer can not feel assured of a full crop. In a great many places where irrigation is practiced, rainfall is sufficient to produce a yield of crops and the artificial irrigation is merely an assistance to bring out a full yield. The people of the Territory are deeply indebted to the Government for the Tonto Dam, now under construction, and the Yuma project, also assured. The early completion of these structures, by means of which the flood waters will be saved, will bring prosperity to many deserving people.

The general health of the people of the Territory has been excellent; aside from a number of isolated cases of smallpox no illness of a general character has been reported. The Territorial board of health has been zealous in its efforts to prevent the spread of disease, and is reported to have been successful wherever cases have been found to exist.

The financial condition of Arizona is excellent. The floating indebtedness, which, at the close of the fiscal year 1903, was $92,341.90, has been paid and there was $20,848.85 remaining in the general fund at the close of the fiscal year 1904. The bonded indebtedness amounts to $1,010,972.43; during the year $10,154 of insane-asylum bonds with accrued interest were paid. There was received from all sources $829,922.27, including $177,762.54, the balance on hand June 30, 1903. There was disbursed $640,628.42, leaving $189,293.85 on hand June 30, deposited for safe-keeping in banks at different points in the Territory. Territorial warrants are paid in cash, a condition not previously existing since the formation of Arizona. This creditable showing is due to retrenchment in public expenditures, aided by revenue derived from incorporation business dispatched in the auditor's office. The total amount collected from this source from March 19, 1903, the date on which the law transferring incorporation business from the office of

the secretary of the Territory to that of the Territorial auditor went in effect, to June 30, 1904, was $41,111.25.

The tax levy is the lowest, proportionately, in the history of the Territory, being but 95 cents on each $100 of valuation. The total taxable property of the 13 counties is $45,069,545.32, an increase of $1,981,504.70 during the year. The governor suggests reform in the method of taxation in order that the total valuation of all taxable property may be ascertained. The valuations of live stock, as returned by many of the counties, are inaccurate. The full number of live stock if properly listed for taxation would materially increase the revenue. The mining industry does not bear its just share of taxation. Of the 2,132 patented mines, the valuation for taxable purposes is but $1,931,517.60. The value of the production from these mines (gold, silver, copper, and lead) was $38,750,000 during the past year. The governor suggests that a small tax on the gross bullion production of all mines would give the Territory an immense income. This matter was brought to the attention of the last legislature in the message of the governor.

The board of loan commissioners authorized the funding of $59,275.29 represented in county and municipal indebtedness. The Territorial funding bonds bear 5 per cent interest, run fifty years, and their retirement is optional at the expiration of twenty years.

The receipts for school purposes were $467,391.23. Of this sum, $438,828.30 was used for the maintenance of public schools. The total receipts were about $81,170.79 more than the preceding year. Seventeen new school buildings have been constructed, 19 new school districts organized, and extensive improvements made in all school property. The school population has increased rapidly, Cochise County showing 1,000 additional children of school age enrolled in the schools of that county. The total increase of school population was 3.75 per cent, enrollment has increased 6 per cent, and the average daily attendance 8.5 per cent. Thirty-seven additional teachers are employed, the number of school children is 27,324, enrollment for the year, 21,366, and the average daily attendance, 13,239. The University of Arizona is an educational institution of excellent standing. There are 2 normal schools, one at Tempe and the other at Flagstaff, and 3 high schools, located at Phoenix, Prescott, and Mesa.

The industrial advancement of the Indians is shown in reports from the various Indian agencies throughout the Territory. The Phoenix Industrial School is one of the largest in the United States. There are industrial schools located at many of the agencies and missionary work is carried on at Tucson and other places. Marked improvement is shown by all the various tribes.

The total valuation of all railroad property is $6,553,136.15. Many of the railroads operating in the Territory are exempt from taxation.

Railway building was active during the year. The Phoenix and Eastern was completed from Phoenix to Kelvin, a distance of 81 miles; the Bradshaw Mountain Railway was built from Mayer to Crown King, a distance of 28 miles. The grading of the Arizona and California railway is in progress west of Wickenburg. This line as projected will extend to the Colorado River, eventually terminating at a coast point in California. The El Paso and Southwestern Railway has constructed 40½ miles of new line from Forest Station to Lewis Springs for the purpose of bettering the grades. The Arizona and Eastern is a projected extension of the Southern Pacific Railway interests from San Carlos, on the Gila Valley, Globe and Northern Railway to Sentinel, on the Southern Pacific. Considerable work has been done on this line, and it is no doubt the intention of the projectors to enter the Salt River Valley.

There are 11 national banks with an aggregate capital stock of $605,000; surplus and undivided profits, $333,732.22; national bank notes outstanding, $401,256.32; deposits, $4,058,990.96, showing an increase over the preceding year of $328,206.84. There are 22 Territorial banks, having a capital stock amounting to $768,310; surplus and undivided profits, $364,656.84; deposits, $5,009,118.67, showing an increase over the preceding year of $258,548.69. There are 7 building and loan associations, with an aggregate liability of $1,128,981.21.

There are 163 churches, with an estimated aggregate membership of 51,000. The Catholic Church leads with 30,000 members, the Church of Jesus Christ of Latter Day Saints has 7,000; the Presbyterian, 2,375; the Protestant Episcopal, 1,781; the Methodist Episcopal, 1,161, and the Baptist, 688. Nearly all denominations are represented.

Ostrich raising is a successful industry in Salt River Valley. There are two farms which, combined, have about 1,600 birds. The feathers are of a superior quality and are shipped to points throughout the world.

There are 53 newspapers published in the Territory, two having been established during the year.

The National Guard of the Territory is reported to be in excellent condition, having been equipped with 2 gatling guns, one of which is installed with the Second Cavalry Troop, at Morenci, and the other is retained at the capital. All ordnance necessary for the equipment of the organization has been obtained. Through the effective work of the Arizona Rangers, organized bands of cattle thieves have been dispersed and many of the leaders convicted and sentenced to Yuma prison. Cattle rustling has become an unprofitable and unsafe pursuit, owing to the watchfulness of the ranger force. During the year 453 arrests were made by rangers. Of this number, 5 were charged with murder, 155 with felonies, and 293 with misdemeanors. One man was killed by the rangers in resisting arrest. No member of the

ranger force was killed during the year, although numbers of them were wounded in encounters with outlaws. The rangers are commanded by a captain, lieutenant, and 4 sergeants. There are 20 privates. The principal work of the rangers is in connection with the enforcement of the live-stock law. The captain's report shows that each member of the organization rode on an average 390 miles per month, or a total, for the entire force, of 10,140 miles. This patrol on horseback, considering that the force consists of only 26 men, is most satisfactory.

There are 294 prisoners in the Territorial penitentiary. The gross cost of maintenance was $50,647.43; the earnings $4,941.15, leaving the net cost $45,706.48. A great many improvements were made at the prison during the year, including the extension of the prison wall, the construction of heavier gates, the building of the guard stands, excavation in the yard, and installation of 5 steel cell cages.

The cost of maintenance of inmates of the Asylum for the Insane was 43 cents per capita per diem. There were 226 patients, 38 of whom were females and 188 males. During the year 350 patients were treated, 37 discharged as cured, 17 paroled, 34 died, and 7 escaped. The net expense of this institution was $37,413.90. A number of improvements authorized by the legislature of 1903 were made.

The Territorial Industrial School was formally opened December 1, 1903. At the close of the fiscal year there were 32 boys confined in the school. The cost of maintenance is considerable, owing to the heavy expense of opening and placing the school in operation.

The grounds surrounding the capitol building at Phoenix cover 10 acres, laid out in driveways and walks, and planted in trees, shrubbery, hedges, tropical plants and flowers. Throughout the year the hedges and lawns are fresh and green and the flowers are in bloom all the year round.

The points of greatest interest are the Grand Canyon of the Colorado in northern Arizona, the Natural Bridge, the Petrified Forest, the cliff dwellings, Montezuma's well and castle, the ice caves of the San Francisco mountains, the Casa Grande ruins, the mission of San Xavier del Bac, numerous hot springs, and many places of prehistoric interest. The mountain ranges reach from 4,000 to nearly 13,000 feet.

The subject of irrigation and water storage receives considerable attention in the governor's report. Absolute dependence, he states, is placed upon the flow of streams for water for irrigation purposes; with the exception of one or two showers, rain did not fall in the Salt River Valley from September, 1903, to the close of the fiscal year, and the resulting protracted drought lessened the flow of streams to such an extent that many farms were deprived of adequate water for irrigation. With the assistance, however, of storage dams this condition would be alleviated. The rivers have great drainage areas and, during

times of flood, water rushes from mountain and mesa, swelling these water courses to their utmost capacity. The flood waters soon pass off, leaving the river in a normal condition and the great stretches of irrigable lands unbenefited. As heretofore stated, the construction of the Tonto dam on Salt River, representing an expenditure of $3,000,000 by the National Government under the provisions of the reclamation law, is under way, 1,500 men being employed at the close of the fiscal year. The Yuma project, having been approved during the year, is in the preliminary stage of construction. This project will bring under cultivation approximately 350,000 acres of land. The expenditure by the Government will be in the neighborhood of $3,000,000. The governor calls attention to numerous available water-storage sites, and suggests that further systems of water storage be inaugurated, to the end that upon all streams in the Territory where proper sites can be found systems of irrigation works be constructed.

Of the 72,000,000 acres of the Territorial area but 5,541,547 acres are privately owned, of which only 250,000 acres are actually irrigated. Under reservoir conditions it is estimated that in the Salt River Valley alone fully 250,000 acres will be cultivated and full crops yielded. Alfalfa is probably the most important product. Corn, wheat, barley, sorghum, sugar beets, oranges, lemons, dates, grapes, grape fruit, apples, pears, melons, olives, and a wide range of vegetables are successfully raised.

There have been no strikes or labor disturbances. The prompt action of the authorities in quelling the Morenci riot of the preceding year, and the swift punishment of the strike leaders and rioters, served as a beneficial lesson to that class who combine with a demand for higher wages riotous and unlawful actions. The wage rate for miners is from $3 to $5 per day, artisans receive from $5 to $7 per day. The demand for labor is good.

In discussing the inadvisability of the passage of the law now pending before Congress having for its purpose the creation of a State from the Territories of New Mexico and Arizona, the governor states:

> Finding themselves confronted with a plan to unite their Territory with New Mexico, the people of Arizona have protested vigorously, and they will continue to do so until they have defeated this repugnant scheme. The injustice of it should readily appeal to all. Here men have fought for over forty years to strengthen a Commonwealth; over $45,000,000 of taxable wealth has been accumulated; $1,000,000 has been invested in churches and church schools; over $1,000,000 has been given to the cause of education in the construction and equipment of public schools; at different points throughout the Territory are located public buildings constructed by the Territory; and everywhere there exists a public spirit and patriotism which shows the character of the people. To be united with New Mexico would bring discouragement to Arizonians. Both districts of the new State would suffer, for the reason that Arizona people would lose heart, and the strife engendered by jealousies would take years to subside. It is natural that Arizonians, proud of what they have

accomplished, would feel that they had worked in vain; New Mexico, with its larger population and its greater power, would naturally seek to strengthen its portion, impelled by the hope of division at some later day.

The two Territories as they stand to-day are different in many ways. They have little in common; their laws are dissimilar. It is doubtful if they could ever become reconciled to exist under one form of State government. The same local patriotism existing in Arizona is also to be found to a great extent in New Mexico, notwithstanding the claims of a few citizens of the neighbor Territory who are willing to take this form of statehood rather than none at all. I believe the merger would not be acceptable to the mass of people of either Territory.

I can not add to the protest that has already been made by the people of the Territory of Arizona against this reprehensible measure, and I have only to say that they would desire that their Commonwealth remain a Territory indefinitely rather than be joined with New Mexico. They desire to come into the Union as the State of Arizona with the present Territorial boundary, and until, in the wisdom of the nation's legislators, they are permitted to do this, they are content to remain as they are, trusting in the justice of the future years to bring the boon so earnestly sought.

Through an appropriation by the legislature amounting to $32,100, derived from the sale of $30,000 of Territorial bonds, the Territory has been able to present a comprehensive exhibit of its resources at the Louisiana Purchase Exposition at St. Louis, Mo. A Territorial building was constructed, prominently located at the main entrance to the grounds, upon the State plateau. Members of the board of managers, appointed by the governor, are present during the continuance of the fair, giving personal attention to the exhibits, as well as to visitors at the building. Literature pertaining to the resources of Arizona is distributed to all seeking information regarding the Territory. The exhibits collected represent all resources of the Territory, including mines and minerals, education, agriculture, and horticulture. Claiming second place among the States and Territories of the United States in the production of copper, Arizona's mineral exhibit naturally attracts general attention.

The governor submits the following recommendations:

That Arizona's claims to statehood be given due consideration, and that such aid as lies within the power of the Interior Department be extended to secure the passage of an enabling act for the admission of the Territory to statehood within the present Territorial limits.

That the influence of the Department be exerted, wherever consistent, in opposition to the passage of the bill now before the Senate of the United States making of the Territories of New Mexico and Arizona one State, to be known as Arizona, such a union of the two Territories being inimical to the best interests of both and opposed to the wishes of the people of Arizona, who prefer a Territorial form of government to admission in the manner proposed.

That the Congress of the United States be requested to reimburse Pima County, Ariz., in the sum of $318,275.29 by direct appropriation, as being repayment to said county for an injustice committed by Congress in passing an act which validated certain 150 bonds, with accrued interest, known as the "Pima County Narrow Gauge Railroad bonds," after the entire issue of said bonds had been declared by the

Supreme Court of the United States to be invalid and void, and for which Pima County has never received value.

That the Indian school facilities in Arizona be increased in order to more quickly prepare the younger generation to become self-supporting, and that measures be taken to more properly care for the graduates of these schools by finding for them proper employment, thus aiding in preventing their return to former modes of life.

That appropriate measures be taken looking to the rejuvenation of the depleted forest area in this Territory, and that a system of tree and tree-seed planting be inaugurated by the Division of Forestry, in order that the watersheds of the various streams in the Territory may be kept unimpaired as sources of water supply.

That further and extensive systems of water storage and systems of power under the provisions of the reclamation act be inaugurated in Arizona, until all flood and subsurface waters are made available for purposes of irrigation.

That appropriate measures be taken by the Department looking to the development of the irrigation resources of the various Indian reservations within the limits of the Territory, in order that the members of the various tribes resident thereon may ultimately be greatly benefited by such development and be made absolutely self-sustaining.

That appropriations be made for the purchase of sites and the erection of public buildings in cities in this Territory where the same can be shown to be of ultimate benefit to the General Government.

That the appropriation for the contingent expenses of the governor's office be increased sufficiently to provide additional clerical force when needed, from time to time, for the expedition of the increased business of the office.

That the injustice of the Congress of the United States in failing to appropriate the amount allowed as the salary of the governor of the Territory of Arizona be called to its attention.

In an appendix to his report the governor presents detailed statements from the officials of the several counties and principal cities and towns of the Territory, which show prosperous and progressive conditions and give valuable information as to the local conditions existing in every section of the Territory.

The question of the admission of the Territory, either independently as a State or coupled with the Territory of New Mexico, is one wholly within the jurisdiction of Congress, and this Department can do no more than direct your attention to the views of the governor in the premises.

Hawaii.

The report of the governor, George R. Carter, presents an interesting review of the conditions, progress, and development of the Territory, and shows that it is rapidly adjusting itself to its new conditions. The Territory is the most isolated of the political divisions of the United States. It is not an insular possession, but an integral part of the Union, organized as a Territory, with as large a measure of self-government as has ever been granted by Congress.

The Territory is composed of eight principal islands, with an area of 6,640 square miles—580 square miles more than the combined area of Connecticut and Rhode Island. It is located in the Pacific Ocean, some 22° north of the equator, 2,100 miles from San Francisco and

3,340 miles from Japan. The climate is unexcelled, and owing to the trade winds and ocean currents, it is not to be compared with other points of the same latitude for isotherma. The temperature varies from an annual average of 74° on the seacoast and 64° on the highlands to 32° on the summits of the highest mountains, which are often snowclad. The rainfall is from a few inches per annum on the dry and deserted lava-covered areas on the lee side of the islands, to some 200 inches or more in special localities on the well-watered and wooded slopes to the windward.

The last census, that of 1900, stated the population of Hawaii to be 154,001, and it is estimated that those who have left the islands offset the arrivals. In 1902 there were 12,550 registered voters. The organic act gives practically universal suffrage, there being no restriction on even the wards of the Territory at the leper settlement, while the natives are not required to understand the English language in order to qualify as voters, though compulsory education has existed since 1850 and English has been the only language taught in the public schools since 1887.

Since June 14, 1900, the date of the organic act establishing the Territory, it has been subject to the full result of the American tariff and coastwise laws, surrendering its former postal and customs revenues to the Federal Government.

The finances of the Territory are stated to be in better shape than they have been since the date of annexation by the United States. Prior to that time the islands were in receipt of an annual revenue approximating $3,000,000, but the diversion of the customs and postal revenues to the Federal Government has since caused a material reduction. Notwithstanding this loss, however, the expenses of the Territory were maintained upon their former basis, without reduction in the number of employees or the current expenses in any single department. In an effort to supply this deficiency, an income tax was passed and every source of revenue closely scrutinized, the assessed values of all property raised, and the whole system of direct taxation largely increased. This remedy, however, was an ineffectual one, being insufficient to meet the requirements, each year bringing deficiencies, which were met by anticipating the income. Such a condition of affairs could not be long maintained, and necessitated a special session of the legislature in the spring of 1904. This session lasted but twelve days, and did most effective work in the enactment of legislation tending to the reduction of the amount of the expenditures that had been previously authorized and curtailing the appropriations for the various branches of the services in many ways. As a result, beginning with the 1st of July, 1904, the appropriations for the year ending June 30, 1905, will be under $2,000,000, while a conservative estimate of the Territory's revenue

for the same period is about $200,000 in excess. As the Territory is unable to borrow money to cover any temporary deficit, it must pay cash or issue warrants, to be redeemed as the income is collected, for bonds as a means of raising revenue can only be issued, as provided by the organic act, for certain public improvements, and then with the approval of the President.

Notwithstanding the fact that the large collections of taxes in November of 1903 had been exhausted by January of 1904 and the issuing of warrants has continued since that time, the expenditures have now been so reduced that by the end of November, 1904, every outstanding warrant, it is claimed, will have been paid, leaving a considerable balance to be applied toward the deficiencies of previous years. During the coming year, therefore, it will not be necessary to issue so large an amount of warrants, and gradually the Territory will be reestablished on practically a cash basis. The net bonded indebtedness of the Territory on June 30, 1904, was $2,185,000. The assessed valuation of real and personal property for 1903 was $129,812,682. The total bonded indebtedness of the Territory does not exceed 2½ per cent of its total taxable property.

The general health of the Territory for the past year has been good, there having occurred 2,654 deaths from a population of 154,001, an annual death rate of 17.55 per thousand inhabitants. The indigent sick are cared for in the Queen's Hospital, Lehi Home for Incurables, and the Kapiolani Maternity Home, all quasi public institutions. The insane are also well cared for. The number during the year slightly increased, being 177, as against 166 a year ago. The outdoor life, uninterrupted through the year, and the mild and relaxing climate pertaining to the islands affects the insane to a marked degree, rendering them more tractable and less violent than in a more rigorous climate. Several new buildings for their accommodation have been completed, and others are under construction.

There are at present 856 lepers in the settlement, while in 1900 there were 1,014. During the past year 97 patients were sent to the settlement. The Territory is under a heavy financial burden for the support of this leper colony. During the year the Territory has been fortunate in avoiding all epidemics. The Panama Canal now being a certainty, it is none too soon to prepare Honolulu for the increased commerce it will bring. Tropical diseases known at the Isthmus are not prevalent in Hawaii, but are likely to find a ready culture under favorable climatic conditions. That the port of Honolulu should be clean, it is stated, concerns not only the Territory of Hawaii, but the entire Pacific coast of the United States, and to keep it in such condition will require the assistance of Federal appropriations. That this problem may be approached satisfactorily, it has been suggested by the chamber of commerce that Congress authorize the President to appoint a com-

mission, consisting of a surgeon of the Marine-Hospital Service, a United States engineer officer from the War Department, and the president of the local board of health, to study the situation on the ground and to report to Congress whatever changes in quarantine regulations and methods of local authority and public works they may deem advisable for bettering the health conditions of that port.

There are 204 schools in the Territory, of which 147 are supported by public money and 57 are private schools supported by trust funds, private contributions, and fees. All of the public schools, from the high school and normal school down to the country schools, are open to the whole population. There are 646 teachers in active employment. In the 147 public schools there are 14,467 scholars. In the 57 private schools there are 4,832 scholars. Fifteen new school buildings and 10 teachers' cottages have been constructed within the year on the various islands of the group at an expense of $92,827.90. On June 30, 1903, the total enrollment of both classes of schools in the Territory was 18,415. The close of 1904 shows 19,299—a gain 844 pupils for the year. With regard to the amount of illiteracy among Hawaiians, it is stated that practically all Hawaiians under 50 years of age can read and write their own language, and nearly all Hawaiians under 20 years of age can read and write English. The same can be said of the Portuguese population. Two industrial schools of a reformatory character have recently been established, one for boys and the other for girls. The disbursements for the year ended June 30, 1904, for the maintenance of public schools, including salaries, current expenses, and new buildings, amounted to $501,480.57.

The public lands of the Territory of Hawaii comprise about 1,720,000 acres; of this total there are some 500,000 acres which may be classed as barren. Under the classification of grazing and forest land are included only about 220,000 acres of so-called first-class agricultural land. Of this amount there are 25,000 acres which are classed as kula, rice and taro lands, and sugar lands. Receipts from the department of public lands for the year ended June 30, 1904, were $143,373.46, an increase of $20,304.08 over the previous year.

The governor goes extensively into the condition of the public lands of the Territory and appends to his report a digest of the present land laws under which public land can be obtained by intending settlers. He states in effect that it is the intention of the commissioner of public lands to cut up for settlement every foot of public land that is fit for settlement as fast as existing leases expire, his aim being to increase the citizen population and the wealth, productiveness, and prosperity of the Territory. Public lands which are more or less valuable for the production of sisal, coffee, pineapples, vanilla beans, etc., can be obtained on most all of the larger islands of the group. Although there are many obstacles to be met with by the settler, still

a man of perseverance and small means can overcome them. Inspection of public lands by prospective settlers is invited and solicited.

Attention is called to the increased revenues from public lands by the present administration for lands leased, and also to the fact that all leases for a term of five years stipulate that should the premises become available for agricultural purposes or be required by the lessor for road or other public uses the said lessor may reassume and take possession of such part or parts of them.

The construction of public works in Hawaii has advanced most satisfactorily. From June 15, 1900, to June 30, 1904, the expenditure in dredging Honolulu Harbor was $143,282.08; this work, it is suggested, as well as the maintenance of the light-houses to June 30, 1904, which cost $39,939.99, should properly have been undertaken by the Federal Government. With large steamers stopping at Honolulu, it is of the utmost importance that the harbor and approaches should be of sufficient depth so that they can be properly handled, and boats going through would find it convenient to call there. The harbor of Honolulu is not large, but it is very safe and easy of entrance; it varies in depth from 24 to 34 feet, and estimates have been made with the idea of an average depth of 34 feet throughout; the whole cost of this work has been estimated at $258,000.

Comprehensive plans for the improvement of the wharves are being carried out at a proposed expenditure by the Territory of $300,000, while $50,000 additional for dredging the entrance to the channel has already been expended. This dredging has already provided a waterway 34 feet deep below mean low tide at only one point.

The sewer system for Honolulu, as prepared by Mr. Adolph Herring, of New York, is now practically complete, and plans for a sanitary sewer system for Hilo have been prepared, but the appropriation of $10,000 is entirely insufficient to carry out the work. A garbage department is maintained in Honolulu and a garbage crematory will shortly be completed.

Besides the construction of school buildings already referred to a new dispensary for Honolulu has been completed, also a fireproof laboratory at the Federal experiment station, as well as a new jail building for the prisoners at Oahu.

In discussing the labor conditions the governor states in effect that it would be of great advantage to the agricultural interests of the islands if the United States immigration laws were amended so as to permit assisting the immigration into the Territory of a desirable class of Portuguese laborers from the Azores or neighboring islands, or if there could be a modification of the Chinese exclusion act so as to permit the immigration to the islands of a limited number of Chinese agricultural laborers, such laborers to be restricted to agricultural labor and domestic service, and strictly prohibited from engaging in mechan-

ical and mercantile pursuits; the immigration to be so regulated that the identity of each laborer might be ascertained and a record kept thereof, and that he might be required at the end of from three to five years from the date of his arrival in the islands to depart therefrom. It should also be provided that such laborers would not be permitted to go from these islands to the mainland. The organic act contains a provision similar to this last, and at the present time no Chinese can go to the mainland from Hawaii.

Under the existing laws of immigration it is impossible for Hawaii to obtain immigrants from Europe or other occidental countries. Hawaii is 5,000 miles from the point where the great numbers of immigrants land in the United States. The experiment of bringing immigrants from Atlantic ports of the United States to Hawaii has been tried without success. The islands are therefore forced to take immigrants from the Orient or go without, and to go without, it is said, would mean the ruin of Hawaiian industries. No class of American citizens would be injured by the special legislation above mentioned, permitting a restricted immigration of field laborers from China; on the contrary, the interests of all Hawaiian citizens and producers, as well as of the planters themselves, would be furthered by such legislation. The population thus created would increase the Hawaiian markets for American products and be for the direct interests of workmen on the Pacific coast and in all industries supplying goods to the Territory, while it would not be a competing element upon the mainland.

The governor further suggests that in taking over Hawaii the United States has acquired distant territory in the Pacific Ocean and that in making laws this fact should be recognized. In matters of immigration the restrictions which are required for the protection of the mainland may be injurious to distant possessions, and a distinction should be made, so that classes not desired on the mainland may be excluded from there and yet the distant possessions be allowed to receive immigrants of the kind needed by them.

As the sugar and rice industries of the Hawaiian Islands are the only ones employing agricultural laborers in large numbers, the needs of the Territory in respect to the numbers, nationality, and kinds of immigrants desired reflect to a large extent the needs of those two industries. At the present time there is, outside of the sugar and rice industries, very little room for the employment of unskilled laborers. In time to come other industries may be established which may employ a number of laborers, but there is now a need for only such class of laborers as can be utilized on the cane and rice fields, and in other branches of the sugar work.

The conditions which exist there render it imperative for the preservation of the industries established that laborers be brought from abroad.

Most tropical sugar-growing countries either possess an indigenous laboring population, available for the cultivation of sugar cane, or have within easy reach people who are readily obtainable for tropical field work, and whose physique and constitution enable them to undertake such field work without fear of injury to their health. There is not such an indigenous population in Hawaii to supply the demand, as the tendency of the native population is not toward field work. They make good mechanics and a portion of them are engaged in various trades, but agricultural labor appears to be distasteful to them, and the number employed on sugar estates is small. This being so, it has for many years been necessary to promote immigration of field laborers to the islands, and many countries have been drawn from. There has been regularly conducted immigration from Germany, Norway and Sweden, the Azores, Madeira, Portugal, Galicia, China, Japan, and Porto Rico, besides which British, Americans, Italians, and negroes (from the United States) have come in small numbers. Since annexation to the United States, assisted immigration has been prohibited by the immigration laws and has entirely ceased.

There are now being operated 52 sugar plantations, with outputs varying from 350 short tons of sugar per annum to 35,000 tons. Most of the plantations are joint-stock companies, and 43 of them are incorporated, with 6,366 stockholders. The sugar is shipped to San Francisco, and also around Cape Horn; from California it goes overland to the East, and under the United States navigation laws it is necessary that all sugar be shipped from here in American bottoms. The plantations have not been able to secure sufficient American tonnage to carry all of their sugar around Cape Horn, and at least one-fourth of the crop of 400,000 tons produced last year had to go to San Francisco, and from thence overland at a rate much greater than by all water. The average annual output of the islands has been 274,848 short tons for the past ten years.

The sugar industry has been greatly depressed owing to the low price which has prevailed during the past three years and a lack of sufficiently competent field labor. In the year 1902 the total tonnage produced in the islands was 355,611 short tons. The capitalization of the incorporated plantations was $63,940,650, and the amount of dividends paid was $1,757,520, or at the rate of 2.75 per cent. In 1903 the total tonnage produced was 437,991 tons. The capitalization of the plantations was $64,878,931.63 and the total amount of dividends paid was $1,555,652.68, or at the rate of 2.39 per cent. The average yield was 4.69 tons of sugar per acre, but it must be noted that the Hawaiian crop takes from 18 to 22 months to mature. The Hawaiian Sugar Planters' Association maintains at considerable expense an experimental station in Honolulu, where new varieties of

cane introduced from foreign sources are carefully tested as to their productive value, and are then sent to the various plantations for trial under their conditions. Probably no other cane-growing country does so much in the way of fertilizing.

The study which has been given to this subject by the plantation managers has undoubtedly raised the yield of sugar per acre throughout the Territory. The average quantity of mixed fertilizer applied per acre, for the crop of 1903, was 910 pounds, the average formula being 7.1 per cent phosphoric acid, 10.1 per cent potash, and 6.1 per cent nitrogen. In addition, specially bought fertilizers, such as lime, ground coral, fish scrap, muriate of potash, tankage, and a mixture of natrate of soda and sulphate of ammonia have also been applied.

During the past few years the cane fields of the Hawaiian Islands have been afflicted with a serious pest, known as the leaf hopper. The Hawaiian Sugar Planters' Association have organized an efficient entomological bureau for the control of the various cane pests, and it is expected that much will be accomplished in keeping down to a safer limit the hopper, borer, and such other pests as have proved so highly injurious.

The coffee crop of 1903 was the largest in the history of the islands, exceeding 3,000,000 pounds. The total value of all coffee exported to the United States and other countries for the year ended June 30, 1904, was $184,180. For 1903, it was $236,860, while for 1902 it was only $126,644. The entire area planted in coffee, and now producing, is under 4,500 acres. The cost of production in Kona is 7½ cents per pound, and the coffee is bringing the producer about 10 cents at present. The price of coffee has been very low for the past seven years. Coffee planters in Hawaii and their brothers in Porto Rico have an uphill road at present. They have not only to compete on uneven terms with Central American and other countries producing mild coffees, that produce on a silver and sell on a gold basis, but cheap Indian labor on the mozo system is also employed there. But the Hawaiian and Porto Rican producers have two things in their favor: First and foremost is the quality of the coffee they produce; secondly, is the fact that they are integral parts of United States and should in time secure the advantages which this connection must bring them.

The possibilities in Hawaii for sisal cultivation are shown by the number of plantations starting on the different islands. From the success of the Hawaiian Fibre Company it is safe to predict that the future of sisal in the Territory is assured. As the islands have such large areas, at present mostly uncultivated, where the soil and climate are well adapted to its growth, and as it requires little expenditure in cultivating and cleaning, owing to the superiority of the fiber over all

others except, perhaps, the Manila fiber, the time is anticipated when sisal fiber will be one of the staple products of the Territory.

The canned pineapple industry has been developing as rapidly as the prevailing scarcity of plants would allow. The total area planted during the year was about 415 acres. The number of plants in the Territory is approximately 3,050,000. Two canneries have been erected during the past year. The output of canned pineapples in 1903 was approximately 8,000 cases, and it is expected that the 1904 pack will be close to 20,000 cases.

The vanilla vine promises to give to the islands a new source of revenue and an added importance in the domestic economy of the country. As to the future of the industry, it is felt that nothing more is needed than that the production be extended, as the demand seems almost unlimited.

Great progress is being made in the introduction of new grasses on the various ranges, and also in the care of the pastures, which has much to do with the increased carrying capacity of the ranges. The island of Hawaii produces a surplus of horses of the bronco type, which might be used to advantage by the army in the Philippines, as they would not have to be acclimated, and would be 2,000 miles nearer to Manila than animals shipped from the mainland. Hawaii also has horses to sell. Great strides have been made in the introduction of new breeds of cattle into the islands. At the present time the Territory supplies all of the beef consumed locally, and there is a possibility that there will be an overproduction, when new markets must be sought. Possibly these could be found by supplying the United States army transports on the way to the Philippines. A rough estimate of Hawaii's herd is: Cattle, 140,000; sheep, 95,000.

The proper management of the forests of the several islands is one of the largest problems facing the Territory of Hawaii. To administer to the best advantage the reserves to be set aside and to deal with the various forest problems which have to be solved in this Territory is the work of trained men. The division of forestry is under the direction of the superintendent of forestry, who, by the terms of the law, must be a professional forester of experience. Much creditable work in forestry has been done in the Territory in past years, both by the Government and by individuals, but the establishment of the present service is a sufficiently important step to entitle Hawaii to a place among the States and Territories which are most active in the forestry movement.

The chief work of the economic entomologists of the islands may be divided into two parts—first, the prevention of the importation of injurious insects or plant diseases from other countries; second, the destruction of injurious insects already present in the islands. A

staff of entomologists, with suitable quarters and apparatus for their work, has been provided for by the Territory.

Sixty-one years ago, in January, 1843, the first custom-house entry was made in the Hawaiian Islands, of a shipment of Columbia River salmon and lumber, on which an ad valorem duty of 3 per cent was collected, amounting to $134.32. Last year the customs collections for Hawaii aggregated $1,229,492.15, placing Hawaii as the eleventh on the list of contributors to the Federal revenues of the United States from customs sources.

Since 1897, the year before the passage of the joint resolution of annexation, approved July 7, 1898, the exports from Hawaii to the United States have practically doubled, increasing from $13,687,799 to $25,157,255 in 1904. Turning to the other side, the imports from the United States grew from $4,690,075 in 1897 to $11,987,050 in 1904. These latter figures, however, are not for the banner year. Following annexation, the commerce of Hawaii was stimulated by the influx of new capital, and in 1901 there was imported from the United States over $22,000,000 worth of goods, while the banner year for exports was 1903, in which the value exceeded $26,000,000.

The principal sources outside of the United States from which goods are received in Hawaii are as follows: Japan, $910,686, mostly saki, rice, and other provisions; British East Indies, $473,967, mostly jute bags; Germany, $432,498, miscellaneous merchandise; Australia, $382,494, almost entirely coal; Chile, $271,173, nitrates; United Kingdom, $259,311, miscellaneous merchandise; Hongkong, $197,083, Chinese provisions and other goods.

Last year there were 488 vessels of 933,847 tons that entered Hawaiian ports, and 497 vessels of 936,627 tons that cleared for the mainland and foreign ports. Of these there were 377 American vessels of 667,350 tons entered, 387 American vessels of 672,539 tons that cleared. This indicates that more than 70 per cent of the total commerce of Hawaii with the mainland and all other foreign ports is conducted under the American flag. There are a number of first-class steamers running between Honolulu and San Francisco, but only one of them makes its terminus at the island port. Present conditions, so far as passenger travel is concerned, show that no consideration is given by the several ocean transportation companies, either from the standpoint of probable expansion of their business here or from any appreciation of the needs or requirements of the people of this Territory; on the contrary, there is every indication of a mutual understanding between these companies to maintain the highest rates this traffic will bear. Between Hilo and San Francisco a steamship line has been established with one steamer running direct between the two ports and making one round trip in about four weeks. This has proved a great convenience to both passengers and shippers on the Island of Hawaii.

The governor's recommendations for Congressional appropriations for Hawaii are:

(1) Immediate provision for dredging Honolulu Harbor.

(2) Refund of $175,222.07 spent by the Territory since annexation for dredging Honolulu bar and harbor, for harbor improvements and buoys, and for maintaining and repairing light-houses.

(3) The construction of a Federal office building in Honolulu.

(4) The construction of a Federal building in Hilo.

(5) Making a survey in anticipation of the construction of a breakwater at Hilo.

(6) A fund for the study of and experiments in the disease of leprosy under the United States Marine-Hospital Service.

New Mexico.

The annual report of the governor, Miguel A. Otero, shows that the Territory has made substantial advance and progress during the year, notwithstanding the existence of a severe drought condition during that period which curtailed production on the farm as well as upon the range and made its influence felt in every channel of business and industry.

The Territory embraces an area of 122,469 square miles and is divided into 24 counties. Provision has been made for the creation of a twenty-fifth county on January 1, 1905, when Torrance County will be established out of parts of Lincoln, Valencia, Bernalillo, Santa Fé, and Socorro counties.

The population in 1860 was 87,034; in 1870, 91,874; in 1880, 119,565; in 1890, 153,593; in 1900, 195,310, and at present it is estimated to be 293,000. Of this number 144,000 came from the States or are children of parents from the States; 127,000 are of native descent, and 13,000 are Indians. Of the 66,396 wage-earners reported in the census year of 1900, 40 per cent, or 27,214, were engaged in agricultural pursuits; 19,478 in domestic service; 10,378 in manufacturing, mining, and mechanics; 7,208 in trade, and 2,118 in professional service.

The public lands in the Territory subject to entry aggregate 52,000,000 acres; included in the lands set aside for four forest reservations are 5,125,000 acres. Grants of land have been ratified by Congress covering 9,963,200 acres, and by the Court of Private Land Claims, 1,934,986 acres. The land grants approved by Congress included 549,065 acres to the Indians. The public lands entered during the year aggregated 549,254 acres.

The progress of the Territory, as heretofore stated, has been under exceedingly adverse circumstances during the twelve months covered by the report, owing to the drought conditions, followed by disastrous floods. Nevertheless, good crops were harvested, and cattle, sheep,

and goats are in excellent condition, and there is promise of abundant winter feed and water, demonstrating the recuperative powers of the commonwealth and its limitless resources. The ranges are not overcrowded, as the lamb-crop increase was only 33 per cent this spring and a million head of sheep and cattle were shipped or driven out of the Territory. The wool crop was almost 20,000,000 pounds and brought good prices, as the quality of wool produced has been improving from year to year. There are to-day over 5,000,000 head of sheep, over 1,000,000 head of cattle, and 100,000 goats upon the range.

On June 30, 1900, there were 1,679 miles of railroad in the Territory; on June 30, 1901, 1,981 miles; on June 30, 1902, 2,263 miles, on June 30, 1903, 2,446 miles, and on June 30, 1904, 2,483.53 miles, a total increase in three years of 841 miles.

In railroad building there has been a lull during the fiscal year, quite a contrast to the three or four years preceding, when the railroad mileage was added to at a very satisfactory rate. Outside of the construction of about 40 miles of lumbering railway, no other railroad building was done, although work has been recently resumed upon the construction of the Albuquerque Eastern and branch railroad from San Antonio to Carthage. Incorporation papers have been filed during the year for the building of almost 1,000 more miles of railroads in the Territory, the most important project being a north and south railroad through the western part of the Territory, with terminals at Durango, Colo., and Clifton, Ariz., which will traverse 600 miles of undeveloped territory especially rich in coal and other mineral prospects. A number of surveying parties are in the field to lay out lines to be constructed in the near future, and assurance is given that work will be resumed by the Atchison, Topeka and Santa Fé Railway upon the New Mexico Eastern or Belen cut-off from Rio Puerco to Mexico, part of which line is already constructed.

Financially the Territory has been doing well; in fact, better than ever before in its history. The revenues are ample to meet all expenses, the public debt is being reduced, the taxable valuation is increasing slowly but steadily; and this year a reduction of 1.51 mills was made in the tax rate for Territorial purposes and Territorial institutions, etc. The Territorial treasurer, J. H. Vaughn, in his report which is appended to the governor's report, states:

> During the year ending June 1, 1904, the Territorial debt has been decreased $35,400; certificates of indebtedness paid. The issue of $101,800 of 5 per cent casual deficit bonds was called for payment on May 1, 1904, interest on the bonds ceasing on that date. Funds to pay off the entire issue (derived from the sale of $101,000 general refunding 4s, sold at par and interest) are on deposit with the National Bank of Commerce in New York City. The total bonded indebtedness of this Territory (June 1, 1904) is $1,062,000, exclusive of bonds called for redemption, and on this same date there were balances to the credit of sinking funds available to

redeem outstanding bonds $191,956.35, leaving the net Territorial debt on June 1, 1904, $870,043.65. The revenues derived from the 6-mill tax, levied for Territorial purposes, has been ample to meet all current expenses provided for under the appropriations, and the general financial condition and credit of the Territory was never better.

Upon the same subject the traveling auditor states:

A comparison for the year ending June 30, 1904, with the year ending June 30, 1903, shows a decided increase in revenue from taxation purposes, both as to Territorial and county funds. This is also true with reference to the collection of and accounting for municipal, school, and other special taxes, licenses, and all other miscellaneous receipts. The best evidence as to the financial improvement of the Territory is the fact that Territorial levies for the year 1904 have been reduced something over 10 per cent, and in many of the counties corresponding reductions have been made in county and municipal tax rates. The assessment for the present year will show something of an increase in nearly all of the counties of the Territory, notwithstanding the unfavorable season, which has caused more or less loss, especially to the stock interests, and I have no hesitancy in predicting further decreases in tax levies for the year 1905. The financial condition of the Territory was never better, and, with one or two exceptions, all of the counties are in excellent shape, having no floating debt, paying interest on bonded debt promptly when due, and possessing sufficiently large cash balances to meet all necessary running expenses. This is especially true with reference to school funds. In all cases where county bonds have been refunded during the past year it has been accomplished at lower interest rates, showing a healthy financial condition. The Territorial banks have been examined as required by law and are without exception in good, solvent condition.

The counties burdened with indebtedness, in part caused by public improvements, in part by the validation by Congress of certain bonded indebtedness, and partly through mismanagement during decades which have passed, are making an effort and are succeeding in adjusting their indebtedness and in meeting their obligations. The majority of the counties, however, have but a small bonded indebtedness and their credit is excellent. The same can be said of the towns and cities.

The prosperous condition of the Territory is indicated by the founding of new banking institutions, the establishment of varied industries, the development of mines, the construction of irrigation systems, and an absence of business failures. There have been no serious labor troubles.

Much satisfaction, it is stated, is evinced by the people on account of the active work of the reclamation service within the Territory. A reservoir is to be built on the Hondo, in southeastern New Mexico, and considerable attention is being paid to the irrigation needs of the Rio Grande Valley, as well as to other parts of the Territory. With irrigation will come rapid growth and development, and even if only one-twentieth of New Mexico's public domain of 50,000,000 acres is irrigated, it will call attention to the fact that many of the lesser streams

and smaller valleys offer a good field for public reclamation work, where, at comparatively small cost, tracts of several thousand acres each can be brought under cultivation as soon as water is available. In one week of the latter part of September and early part of October, this year, there was a precipitation over the entire Territory of from 3 to 8 inches, sending immense flood volumes from the mountain slopes and hillsides, over 90 per cent of which flowed to waste for lack of storage reservoirs, and yet millions of fertile acres lie waste just for the want of this water.

Agriculture is the chief industry of the Territory to-day; still only a quarter of a million acres are under cultivation. There is no doubt that by storing the flood water this area could be increased ten times and New Mexico would become the granary of the Southwest. In this connection attention is directed to the fact that New Mexico wheat and other farm and orchard products received over a score of first and second premiums at the Louisiana Purchase Exposition at St. Louis this year, as well as at the World's Fair at Chicago, the Pan-American Exposition at Buffalo, and at other great exhibitions.

The governor again calls attention to the undesirable agitation of certain land promoters and others for the building of a so-called international dam at El Paso. He states there would be no objection to the building of this dam were it not for the fact that with its construction is to go a permanent injunction against all the people, not only of the Rio Grande Valley in New Mexico and Colorado, but of all tributary valleys, prohibiting them from making any further appropriation of waters beyond the appropriations already made. There are 200,000 people in the Rio Grande and tributary valleys above El Paso, and there is room and water for many more. If the flood waters are preserved, with which could be cultivated twenty times as much land as is now under cultivation, it would add to the prosperity of the Territory. The building of the international dam would stop all further growth and development of the valley, which would gradually return to a desert waste.

A former Attorney-General of the United States has pointed out the injustice which such a step would inflict upon citizens of the United States, and the people of this Territory are greatly discouraged by the fact that no definite assurance has been given them that they will not be robbed of their surplus waters through the claims of a foreign government, the satisfaction of which, as an Attorney-General of the United States has said, neither the comity of nations nor treaty rights demand. That there are accusations of land speculation dependent upon the building of the so-called International Dam is a matter of current report and newspaper notoriety. However, the construction of Government irrigation works on the Rio Grande and its tributaries

within New Mexico will be accepted as tacit assurance that the Federal Government will deal justly and liberally with the people of the Territory.

A number of public buildings have been erected or are under construction in various parts of the Territory. The Territorial Deaf and Dumb Institute at Santa Fé has been completed; a miners' hospital is being erected at Raton, and a Territorial reform school at El Rito; a Territorial orphans' school at Helen is under roof; a new dormitory is finished at the New Mexico Normal School at Silver City; a $30,000 addition is almost completed to the New Mexico Insane Asylum at Las Vegas; a Territorial institute for the blind is being built at Alamogordo; the dormitory at the College of Agriculture and Mechanic Arts has been enlarged, and at other Territorial institutions new buildings have been erected or other extensive improvements have been made. Roosevelt and San Juan counties have completed substantial court-houses, and Quay, Luna, and other counties intend to build new court-houses and county jails in the near future.

Santa Fé is at present building a $30,000 public-school house upon the Fort Marcy addition, donated to the city by Congress during the past year. The cause of public education is flourishing, and there are more children enrolled in the public and private schools than ever before, while a large per cent of all public revenues is devoted to school purposes. The Territory claims that, in proportion to population, it maintains more Territorial institutions, most of them higher institutions of learning, than any other commonwealth in the United States. The fact that over $3 per capita is expended annually for educational purposes is one of which the Territory is proud.

The school population includes all children between the ages of 5 and 21 years, and the census is taken annually. In 1901 this population was 53,208; in 1902, 62,864; in 1903, 68,152, and in 1904, 68,400. The enrollment for the public schools in 1904 was 39,704, and the average daily attendance 29,582. There were 729 public schools, in which were employed 852 teachers. The receipts from all sources for school purposes during the year were $489,308.09, and the expenditure during that period for school purposes was $353,012.22. The average school term was four months, and the average salary paid teachers $56 per month. The total value of all school property in the Territory was $2,171,702.25. The enrollment of pupils of the schools was 42,925, and the annual expenditure for all the schools $723,048.32.

The mining industry of the Territory has not progressed as rapidly as the mineral wealth of the Territory would indicate. The production of gold and silver declined during the past twelve months, but the production of coal has been materially increased. There is a vast field for investment and development in New Mexico mining districts.

Seventeen million six hundred thousand dollars' worth of gold was produced in the Territory between 1860 and 1900. In 1903 the minerals produced were, gold, $384,685; silver, $148,659; copper, $860,737; lead, $94,936—a total of $1,489,016, which, however, does not include the production by individual placer miners or prospectors not mining in a systematic way. In addition there was produced a vast quantity of iron, turquoise, gypsum, building material, and a number of other useful minerals and precious stones.

The area of prospected coal lands aggregated 1,493,480 acres, and the amount of coal in sight, 8,813,840,000 tons, is valued at $10,000,000,000; 33 coal mines were worked during the year, 6 mines opened, and 1 abandoned. The amount of coal produced was 1,594,584 tons, valued at $2,185,779. The quantity of coke produced during the same period aggregated 35,800 tons, valued at $107,400. The number of men employed in the coal mines was 1,972.

In the line of industrial development the governor calls attention to the fact that during the past four years 737 companies filed incorporation papers with the Territorial secretary, having an aggregate capitalization of $413,884,866, and that during the past year 184 companies were incorporated, with an aggregate capital of $104,172,900. There were written during the year life-insurance policies amounting to $3,725,364.72, fire-insurance policies amounting to $17,000,315.64, and premiums thereon were collected to the amount of $892,249.36. The losses paid were $312,625.74. The amount of internal-revenue tax paid in the Territory aggregated $163,547.95. The revenue on interstate express business amounted to $32,917.55.

Under the act of Congress approved June 21, 1898, donating a limited area of public land for the benefit of the Territory for educational and other worthy purposes, the United States commission, consisting of the governor, the surveyor-general, and the solicitor-general of the Territory, has selected, located, and entered 233,473.26 acres. The character of the land so selected embraces about 6,000 acres of timber land, the remainder being mostly for grazing purposes; there yet remain to be selected about 157 acres.

The Court of Private Claims this year terminated its labors, which have been of great benefit to the Territory in settling land titles, in restoring to the public domain millions of acres of land, and in adjudicating controversies which were retarding the progress of the Territory.

The wisdom of preserving New Mexico's forests and the benefit derived from the liberal activity of the National Government in that direction are appreciated by the people of New Mexico more and more each year. However, protest is made against including within forest reserves land that is not timber land, and against onerous regulations

governing grazing upon the lands reserved for forestry purposes. The people of the Territory desire that the National Government take steps to prevent the vandalism that destroys or disfigures its unique, prehistoric cliff dwellings and ruins, and they approve of a reservation that will include the greater part of the cliff dwellings, if the establishment of such reserve does not mean the withdrawal from settlement or occupation of vast areas of which only a very small part is covered by prehistoric remains and structures.

One of the most remarkable pieces of public work during the past year has been the construction of the so-called scenic road over the Pecos River Forest Reserve between Santa Fé and Las Vegas. Not only have about 15 miles of splendid wagon road been built, but the problem of employing convicts without entering them into competition with established industries has been successfully solved. There is perhaps no other road in the United States the superior of the scenic road in the magnificent scenery which it traverses in crossing the Sangre de Cristo Range at an elevation of 9,000 feet and as it descends into the picturesque upper Pecos Valley. The hope is expressed that Congress will extend aid in completing the road as planned, for in greater part it passes over the public domain included in the Pecos River Forest Reserve. The superintendent of the Territorial penitentiary at Santa Fé states in regard to this matter:

> The scenery along this road is as fine as can be found anywhere. A great deal of the road building has been very heavy, on account of the rock work in constructing the switch backs to get over the Dalton Divide. The maximum grade on all the road built is 5 per cent. So slight is the grade on the switch backs that a vehicle can travel at a good speed, going or coming, over the Dalton Divide. The principle of working prisoners on public roads has been demonstrated to be of great benefit to the public, when the prisoners are employed in constructing roads where they are badly needed and the cost of such construction is too great. The cash value of the scenic road, as far as built with free labor, would be in the neighborhood of $50,000, while the actual expense to the Territory by employing convict labor does not exceed $10,000. The prisoners seem to take an active interest in the work.

Attention is called to the appended reports of the officers in charge of the Government sanatorium at Fort Bayard and Fort Stanton, and the great success they have achieved in the mitigation and cure of tuberculosis. They have demonstrated beyond a doubt that an outdoor life accompanied by proper hygienic treatment, in New Mexico, are the best methods thus far discovered to combat the "great white plague." There is no other climate on the face of the earth quite as conducive to recovery from tuberculosis as that of New Mexico, as has been recognized by the United States Government in establishing its two great sanatoria within the confines of this Territory.

Within the past few years the National Government has been doing splendid work for the Indians in New Mexico, although the peaceful

Pueblos have not been as well looked after until recently as the more nomadic tribes. However, owning large tracts of land and ample water rights, with day schools being erected in every pueblo, the non reservation schools being enlarged, and the Government building irrigation works for them and supplying them with instructors and legal counsel, the lot of the Indian in New Mexico has fallen into far pleasanter places than that of the other native inhabitants, or, rather, early settlers of the Territory. The question of granting the Pueblo Indians the right of citizenship has been decided by the Territorial supreme court in the affirmative.

An effort will be made by the friends of the Indians to circumvent the result of this decision, although it must be remembered that if the Pueblo Indian is to enjoy the privileges of citizenship he should also bear its responsibilities. Considering how well he has been and is being taken care of by the National Government, which provides schooling, supplies, protection, etc., the Pueblo Indian is certainly as well able as the average native settler to assume the responsibilities of citizenship at the same time that he is given its privileges and protection. The more individual responsibility is given the peaceful Indian the sooner the Indian question will disappear.

The administration of justice in New Mexico has as a rule been fair and swift. It is claimed that there is less crime and less disturbance of the public peace in New Mexico than in any other Commonwealth, either in the East or in the West. The court dockets are well cleaned up and the disposition of the judiciary is to administer justice not only fairly but also quickly. The creation by Federal legislation of a sixth judicial district has already proved very beneficial in facilitating the administration of justice. During the coming session of Congress an effort will be made to secure legislation creating a seventh district, thus giving New Mexico at least as many judicial districts as Oklahoma now has, with less than one-half of the area.

A very creditable exhibit has been made by the Territory at the Louisiana Purchase Exposition at St. Louis, its building being one of the most attractive on the Plateau of States. New Mexico exhibits received a proportionately large share of the awards made and attracted much favorable attention and comment. In connection with the exposition the board of managers issued two illustrated volumes, which review at length the characteristics, resources, industries, and other features of the Territory. In addition, the Territorial bureau of immigration issues pamphlets descriptive of each county and of the most important industries of this section.

The governor states that it is with a sad heart he refers to the death of the solicitor-general of the Territory, the late Edward L. Bartlett. During many years of public life he maintained an integrity that was

exemplary and did invaluable service for the public. His last report is included in the report of the governor for the present year, and the governor calls attention to the recommendations therein contained as follows:

I would again call your attention, and through you that of Congress, to the necessity for providing by a proper act the time within which acts of the Territorial legislature should go into effect. Under our present law, unless otherwise provided in the act, all new laws take effect thirty days after their passage, but the custom of the legislature for many years past has been to provide "that this act shall take effect and be in force from and after its passage." This practice works a great hardship and injustice on our people as well as upon the courts. The last legislature passed 122 acts, all but a few of which were to take effect immediately. The legislature adjourned on the 19th of March, and the laws were not printed and ready for distribution until July. During that interval a term of court had been held in every county of the Territory, and neither judges, attorneys, nor litigants were informed of what laws had been repealed or amended, or what new ones had been enacted. I would renew my recommendation that Congress provide for distributing its acts to the different Territorial officials as soon as they are published, as many of the acts directly affect the conduct of business in the Territory, and at present even our judges are not supplied with them.

The National Guard held its first encampment in many years during the past summer; the camp was at Las Vegas, and, considering the lack of means and other limitations, was very successful. The adjutant-general in his report states:

The improvement made by the men in the short period of encampment in drill and soldierly bearing was quite marked. The infractions of discipline were few and of a minor character, and considering that it was the first time the men had been brought under the strict military discipline of camp life their conduct was remarkably good. Not a single case of intoxication was brought to my attention.

The secretary of the cattle sanitary board, in reference to the inspection service of the board, states:

The inspection service of the board is in the most satisfactory shape. Personally I have been connected with the work of the board here and elsewhere for fifteen years and I can say unhesitatingly that I never knew a more careful, efficient body of inspectors anywhere. During the past fiscal year the inspectors of the board inspected for shipment out of the Territory 177,062 head of cattle, 12,561 head of horses and mules, and 28,497 hides. During the same period 8,731 cattle were inspected and admitted into the Territory.

The sheep sanitary board reports that during the past fiscal year 822,832 sheep were driven out of the Territory, while only 5,700 were brought in. The president of the board states:

Some two years since we tried the plan of placing in one or two districts salaried inspectors who would devote their entire time and attention to range inspections of sheep, and especially to eradicating the disease of scabies from the flocks of sheep in their districts. The board has found this plan highly successful, and in the districts where salaried inspectors have been employed for two years the disease of scab has been practically eradicated. In some of the districts not a single scabby sheep was offered for shipment. The board intends to employ a corps of from seven to ten salaried range inspectors in addition to local inspectors.

Every effort is made to comply with the stringent regulations of the United States Bureau of Animal Industry regarding the inspection and dipping of sheep.

In discussing the question of statehood the governor expresses the opinion that—

> There is no doubt that the great majority of the people of New Mexico are opposed to joining New Mexico and Arizona into one Commonwealth, as is proposed by pending legislation. Even the small percentage who would acquiesce in such a consolidation prefer single and separate statehood for each Territory. This is not due to any innate animosity between the two Territories, but to the inherent differences in population, in legislation, in industries, in contour, in ideals, and from an historic and ethnologic standpoint, not to mention that the consolidation of two Commonwealths like New Mexico and Arizona into one is unprecedented in American history.

The question of the admission of the Territory as a State is one wholly within the jurisdiction of Congress, and this Department can therefore do no more than direct your attention to the matter.

Oklahoma.

The annual report of Governor Thompson B. Ferguson presents in a most comprehensive manner the resources, advancement, and present conditions in the Territory.

Oklahoma is situated between the thirty-fourth and thirty-seventh parallels north latitude, and principally between 96° 30′ and 100° west longitude. The State of Kansas lies along the northern boundary, the Indian Territory on the east, Texas on the south and west; a small portion of northwestern Oklahoma is bounded on the west by New Mexico. The length of the Territory, measured from extreme points from east to west, is 365 miles, and the width, from extreme points from north to south, is 210 miles. The altitude at its highest point, in Beaver County, in the extreme northwest, is 3,900 feet; at its lowest point, in Payne County, in the eastern part, it is 776 feet. The bill which opened Oklahoma to settlement became a law on the 2d day of March, 1889, the President issued his proclamation on the 22d day of the same month, and the country was opened on the 22d day of April following.

The counties of Logan, Oklahoma, Cleveland, Payne, Canadian, and Kingfisher were formed out of "old Oklahoma." Additions to all of these counties have been made from lands acquired from time to time by the opening of adjacent Indian reservations.

That section of the country formerly known as the neutral strip or No Mans Land, 167 miles in length and 34½ miles in width, containing 3,687,360 acres, was added to Oklahoma in 1890, and designated Beaver County; it is located between the one hundredth and one hundred and third meridians and between the parallels 36° 30′ and 37° north latitude.

The Sac and Fox, Iowa, and Potawatomi reservations, embracing 1,282,434 acres, were opened for settlement September 22, 1891. This land is located in the eastern portion of the Territory, and includes portions of the counties of Pottawatomie, Lincoln, Cleveland, Logan, Oklahoma, and Payne. No county was formed wholly out of the land acquired at this opening, but the territory included was divided among the six counties enumerated above.

The opening of the Cheyenne and Arapaho country, embracing 4,297,771 acres, took place on the 19th day of April, 1892. This country extends to the western boundary of the Territory, and within its borders are included the counties of Blaine, Custer, Dewey, Day, Roger Mills, Washita, and portions of Canadian and Kingfisher.

The Cherokee Strip, containing 6,014,239 acres, was opened to settlement on the 16th day of September, 1893. The land embraced in that opening lies in the northern portion of Oklahoma, extending from the Arkansas River on the east to the one hundredth meridian, or the line of No Man's Land, now Beaver County, on the west.

The strip country now includes the counties of Pawnee, Noble, Kay, Grant, Garfield, Woods, Woodward, and a small portion of Payne.

The Kickapoo lands were opened for settlement on the 23d day of May, 1895. These lands contained 206,662 acres, and after settlement were attached to Lincoln, Oklahoma, and Pottawatomie counties.

By virtue of a decision of the Supreme Court of the United States, rendered on the 16th day of March, 1896, Greer County, embracing 1,511,576.17 acres, was added to Oklahoma; this county had formerly been claimed as a part of the State of Texas.

The Kiowa, Comanche, Apache, and Wichita reservations, comprising nearly 4,000,000 acres, were opened to settlement on the 6th day of August, 1901; the country embraced in this reservation has developed rapidly.

In April, 1904, the Oto, Ponca, Missouri, and Kaw reservations were by Congress attached to Oklahoma by virtue of an amendment to the Indian appropriation bill.

The whole of the Kansas reservation was attached to Kay County. Portions of the Ponca Reservation were also attached to Kay County. Portions of the Missouri, Oto, and Ponca reservations were added to Noble County. Portions of the Oto and Missouri reservations were attached to Pawnee County.

The country is well watered. The streams of Oklahoma flow in a southeasterly direction. The principal rivers are the Arkansas, the Chikaskia, the Salt Fork, the Cimarron, the North Canadian, the South Canadian, the Washita, and the North Fork of Red River.

Timber abounds along many of the streams and has proven a great factor in the development of the country. At least 30 varieties of

wood have been reported found. Prominent among the forest trees found in the Territory might be mentioned oak, walnut, elm, cottonwood, hackberry, hickory, pecan, cedar, ash, and numerous other kinds.

The immigration during the past year has been quite heavy. Over a million and a half acres of public land have been taken up by the homesteader. This alone means an increase in population of from 40,000 to 50,000 people.

During one month (April, 1904) there were nearly 500 transfers of farm property reported by the recorders of each county. The larger portion of the buyers of farm property were homeseekers from the States. A conservative estimate of the increase in population from this source is stated to be 20,000. In addition to the above, the cities and towns have had many acquisitions to their numbers, which will doubtless swell the total immigration to nearly 100,000.

The population of the Territory has steadily increased during the past year. A conservative estimate, the governor states, would fix it at not less than 700,000.

The population is cosmopolitan in character. Every State and Territory is represented as well as many foreign countries, though the percentage of foreign born is not over 5 per cent. According to statistics compiled in 1900, the percentage of illiteracy was but 5½ per cent, which is less than in three-fourths of the States of the Union. The enumeration on which the above percentage is computed includes all Indians who have by Congressional act been granted citizenship. Eliminating the Indians, the true percentage of illiteracy would be reduced to about 2 per cent.

During the fiscal year ending June 30, 1904, surveys were made by engineers of the reclamation service of proposed projects in different parts of western Oklahoma. The localities visited include portions of Beaver, Woodward, Woods, Day, Washita, Greer, Roger Mills, Kiowa, and Comanche counties. Only one project worthy of consideration by the Federal Government has been encountered, including portions of Kiowa and Comanche counties. It contemplates the storage of the waters of Otter Creek near the small town of Mountain Park, where the conditions are very favorable for the construction of a rock-fill dam about 75 feet high. The reservoir which would be so created would cover 4,275 acres, all of which is in private ownership, and would store approximately 43,000 acre-feet of water. In conjunction with the above project, surveys have been made for a reservoir on the North Fork of Red River contemplating the construction of a dam 65 feet high at a suitable point near Lugert. This reservoir would flood about 3,800 acres and would extend up the river to within the neighborhood of Granite, Okla.; its capacity would be about 80,000 acre-feet. It is estimated that approximately 110,000 acres could be irrigated from

the two reservoirs, the estimate being based on a duty of water of 12 inches during the irrigating season, which it is believed will be sufficient to supplement the rainfall in order to produce crops.

Agriculture in Oklahoma is thoroughly modern in its equipment and its achievements. The agricultural college and experiment station were duly located and established as one of the earliest acts of the first legislative assembly. The farmers' institute system, though of comparatively recent origin, is rapidly extending its organizations and influence into every community in the Territory.

The total acreage in corn in 1903 was 1,455,000 acres, and the aggregate yield was 26,336,000 bushels, a light yield as compared with that of 1902, when the total was 43,800,000 bushels.

The aggregate yield of wheat in Oklahoma in 1903 was 32,000,000 bushels, from 2,250,000 acres. Over one-half of the total crop was ground in the mills of Oklahoma.

Broom corn is a staple crop in the central counties of the Territory, from whence it is largely exported; about 10,000 tons were shipped from the Territory last year, being the product of 35,000 acres.

The cotton crop for 1903 amounted to 204,000 bales, which was a light yield compared with the average of preceding years, considering the acreage.

The indigenous fruit trees, bushes, and vines of Oklahoma included fully 25 species, and they serve to indicate the adaptability of its climate and soil to fruit culture. Orchards, vineyards, and small fruit plantations are to be found on many of the farms of eastern and central Oklahoma, and commercial orchards are beginning to be in evidence.

Potato growing in some portions of the Territory is a very profitable industry. In 1903, 587 cars of fine potatoes were shipped to city markets, at an average price of 40 cents per bushel. This year there have been shipped 439 cars, at an average price of 70 cents per bushel. Each car of potatoes averaged 450 bushels, and at 70 cents net the farmer receives $315 per car for his crop, which costs him an average of 25 cents per bushel to raise and market.

Railway building and the development of Oklahoma have been coincident. The railroad growth has been rapid, but necessity demanded it. Every county in the Territory has more or less railway mileage; twenty-three out of the twenty-six county seats have railway facilities. Several cities have from three to eight lines in and out, thus placing the producer, manufacturer, and merchant in competitive touch with the markets of the larger cities.

Something of the commerce of the Territory is indicated by the reports of some of the lines of transportation. There have been shipped out of the Territory over the lines reporting 29,794 cars of wheat and flour, 12,481 cars of live stock, 271,394 bales of cotton,

and 927 cars of corn. There were shipped into the Territory 13,378 cars of coal, 1,763 cars of farm implements and vehicles, and 1,439 cars of emigrant goods.

The increase in railroad mileage over that reported last year shows 689.44 miles built during the year. Much of this was the actual completion of several short lines which were unfinished at the beginning of the fiscal year. Several new lines are projected, work is now in progress on two of them, and considerable work will be accomplished during the coming year. The total railroad mileage is 3,222.75, of which 2,597.92 is main track. There are ten lines in operation, whose total assessed valuation is $11,109,667.

Manufacturing enterprises are increasing in number. Raw material is abundant, shipping facilities excellent, and capital is becoming interested. The flour-milling industry leads all others in importance, and represents an investment of over $2,000,000. There are 63 mills in operation which have an average capacity of 10,000 barrels per day. The exports of flour from the Territory during the past six months amounted to over 30,000,000 pounds. There are 400 grain elevators scattered along the various lines of railway, with an average capacity of 10,000 bushels each.

Public interest in improving the highways has been awakened. On April 1 a good-roads convention was held in Guthrie, and resolutions were adopted indorsing the plan of national and State aid and local cooperation in the permanent improvement of public highways, and demanding the enactment of a law providing for the working of convicts and county prisoners on county roads and favoring county supervision instead of the present system.

Farm lands are increasing in value. Agricultural lands range in price from $15 to $60. There were 8,661,945 acres of farm land returned for taxation in 1904 as against 2,875,704 in 1900. Taxes are not high; the valuations placed on property by assessors are very low, as, for instance, farm lands, $3.54; sheep, $1.18; swine, $1.81; cattle, $7.20, and horses, $15.73. The rate of the Territorial levy for 1904 is 5¾ mills on the dollar, which will produce an income of $521,002. The assessment for 1904 is made on a total valuation of $90,609,073; this is an increase of over 80 per cent in the valuation of 1900. As assessment valuations are usually one-fifth or one-sixth of actual values, the total value of all property in Oklahoma is over $500,000,000.

The Territory has no penitentiary. The prisoners are kept in the Lansing, Kans., Penitentiary under a contract with that State, the Territory paying 40 cents per day for each prisoner. The contract with the State of Kansas will expire on the 27th day of January, 1905, and as the Kansas authorities have expressed a disinclination to renew the contract, the situation, so far as the Territory is concerned, is a grave one.

There are at this time 379 Oklahoma prisoners confined in the Kansas Penitentiary. What to do with them in the event that Kansas should refuse to renew the contract is a problem for serious consideration. The Territory has now, and has had for several years, a public-building fund sufficient to erect a penitentiary and other public buildings, but there is a Congressional prohibition against it each year and has been for some time past. When the Federal appropriation bill is enacted by Congress that portion of it relating to Oklahoma invariably contains a prohibition against the legislative assembly of Oklahoma making provision for any public building, notwithstanding the fact that there are in the treasury of the Territory ample funds to erect a penitentiary building and equip it for service. The governor recommends the removal of this Congressional prohibition.

There has been paid during the past year for care and keeping of convicts at Lansing, $50,402.15, and for their transportation, $5,944.90; a total of $56,347.05.

The insane patients of the Territory who have been committed by the various county boards of insanity have been confined in an institution located at Norman, Okla. This institution is a private concern, with which the Territory has a contract for the care and keeping of its insane at the rate of $200 per annum for each patient. At the close of the year ending June 30, 1903, there were domiciled in the institution 400 patients. During the past year the Territory paid for care and treatment of the insane $78,642.51, and for their transportation, $5,417.64.

The deaf and dumb of the Territory have been cared for and educated in a private institution for that purpose, located at Guthrie, at $275 per head per annum for each scholar. The amount expended during the past year in caring for and educating these unfortunates was $18,935.56.

Oklahoma has no public buildings, and, as heretofore stated, has been prohibited by Congressional act from locating any. Several are very much needed, notably asylums for the insane, deaf, dumb, and blind, a penitentiary, and a home for the incorrigible youths. There is now in the public building fund the sum of $305,956.69.

There are 285 weekly and 28 daily newspapers published in the Territory; also, 23 monthly, 5 semimonthly, and 3 quarterly periodicals.

Oklahoma has been a most profitable field for investment; its securities always bring the highest price on the market and are much sought after. Its abundant resources in the way of raw material have invited capital for manufacturing.

Among the natural resources which are but partially developed may be mentioned the extensive salt deposits in Woods, Woodward, Blaine, Roger Mills, and Greer counties. The gypsum deposits in Greer,

Custer, Blaine, Washita, Woods, and Woodward counties are so vast that it is difficult to comprehend their extent. The great abundance of this material, both in the form of rock and dirt, is sufficient to supply a large number of cement mills for a hundred years. The granite fields are located principally in Greer County and consist for the most part of high and massive mountains, and there is such an abundance of this rock above ground that it alone would supply the granite-using world for many years to come. The quality is the very best. The greater portion is solid red granite, pronounced by experts to be the equal of the celebrated Peterhead Red Scotch granite and equally adapted for monumental and building purposes.

Coal has been discovered in several places, but not until recently has much interest been paid to the development of mines. The surface or superficial veins vary in thickness from 4 to 8 inches, and while of little value for commercial purposes are chiefly important in indicating the presence of the deposit at a greater depth. The second vein usually runs from 2 to 5 feet in thickness, and is several hundred feet below the surface. Coal has been found at various times in the counties of Oklahoma, Lincoln, Noble, Pottawatomie, Pawnee, and Roger Mills.

Much interest has developed during the past year in many localities because of the finding of oil and gas in considerable quantities. Local companies have been formed for the purpose of drilling in nearly every town of importance, and prospecting has thus far developed the presence of oil at a depth of from 1,500 to 2,000 feet in greater or less quantities. The Cleveland well, in Pawnee County, on the east side of the Territory, has proved to be a large producer, and this field will doubtless show great results in the near future.

During the past year fire insurance companies have collected in premiums $861,575.94 and paid in losses $378,419.49, and life insurance companies have collected $816,678.59 in premiums and paid in losses $222,199.78. The business of fraternal companies is not included in the above.

The different church denominations are well represented, there being 736 church buildings and a reported membership of 102,013 The value of church property is $1,363,725.

There is still some vacant land in Oklahoma. The Territory is now divided into seven districts, two having been combined during the past year—Oklahoma City with Guthrie. The greater portion of the land remaining unappropriated is best fitted for grazing purposes, as much of it is either hilly and rough, sandy, covered with saline or gypsum deposits, or rocky and unfit for cultivation. A considerable portion is situated above an altitude of 2,500 feet and has a consequent small rainfall. This portion of the country is chiefly devoted to live-stock interests, as the native grasses are very nutritious and supply pastur-

age during the entire year; 1,500,012 acres have been filed upon by the homesteaders during the year, leaving 2,095,427 acres unoccupied.

There was collected in internal revenue in the Territory for the year ending June 30, 1904, $74,397.63.

From the office of the secretary of the Territory there have been issued 597 notarial commissions during the year. Sixty-five requisitions have been granted and forty-two honored. The sum of $23,468.80 has been collected in fees from insurance companies, corporations chartered, notaries, and miscellaneous items, and the same turned over to the Territorial treasurer.

The total capitalization of the railroads chartered during the year was $127,750,000.

In May last the only bonded indebtedness which the Territory ever had was canceled by the payment of $48,000 and the accumulated interest. The funds of the Territory are deposited with six banks, which have furnished as security Territorial warrants and county and school district bonds. They pay the Territory 3 per cent interest on daily balances. The amount received in interest from the depositories during the past year was $18,630.16. There is now deposited with the various banks the sum of $539,501.16; from July 1, 1903, to June 30, 1904, there have been redeemed in warrants $990,648.88. There are now outstanding in warrants the sum of $655,937.19.

The latest reports from the county superintendents, bearing date of June 30, 1903, show that there are 190,978 children of school age, 6 to 21 years, in the Territory; that 3,438 teachers were employed that year; that there were 2,578 schoolhouses, valued at $1,617,213.15; that there was received for school purposes $1,535,744.15; expenditures, $1,266,278.55, and that 2,500 teachers were certificated. The foregoing statistics are not complete, inasmuch as they do not include all of the counties or any of the Territorial institutions.

The Oklahoma public school system is thoroughly planned and organized, and may be divided properly into Territorial institutions, city schools, and rural schools. There are 7 Territorial institutions, 22 cities of the first class, with modern school facilities, and approximately 300 county schools. The Territorial institutions consist of the university at Norman, the Agricultural and Mechanical College at Stillwater, the Central State Normal at Edmond, the Northwestern State Normal at Alva, the Southwestern State Normal at Weatherford, the University Preparatory School at Tonkawa, and the Colored Agricultural and Normal University at Langston.

The secondary schools of the Territory consist of the University Preparatory School at Tonkawa, the preparatory school in connection with the university, the Agricultural and Mechanical College at Stillwater, the normal schools, the Logan County High School, and about 40 high schools in various cities. These schools are quite up to the

standard, most of them offering a four-year course. The Logan County High School is the first county high school established under the new law, and has been a marked success. Its influence has been felt already beyond the confines of Logan County. The course of study is standard, the teachers of a high character, and the discipline excellent. A new building, to cost $35,000, is now being erected. Besides these there are several important denominational schools, and there are numerous academies, convents, business colleges, etc., under the control of the various denominations and private individuals.

The seven educational institutions under Territorial control report an enrollment of 3,426 pupils during the past year. Additional buildings and facilities have been provided for the Central State Normal at Edmond, and a science hall and library building for the university at Norman. For the fiscal year ending June 30, 1904, there was apportioned from the school fund (which accrued from rentals of school land) among the common schools the sum of $220,177.85, being an increase of $38,348.97 over last year. The school population has also increased 12,495 over the former enumeration. The total appropriation per capita was $1.15.

There are 92 national and 250 Territorial banks, with a combined capitalization of $5,785,000. The total deposits are $18,384,318.84. The average reserve held by national banks is 34 per cent, while the Territorial reserve is 46 per cent.

The Territorial law library contains 20,473 volumes, and is valued at $65,000, which includes $22,000 worth of law publications held for sale. Since the oil-inspection law of 1903 went into effect in April, 1903, there have been inspected 24,788 barrels of low-grade oil, 22,948 barrels of the best grade, and 37,258 barrels of gasoline, making a total of 84,994 barrels inspected. Of this number, 410 barrels were rejected. There has been collected as inspection fees the sum of $9,058.68, of which sum the amount of $7,104.13 has been paid into the Territorial treasury and $1,954.55 has been retained by and for deputies. There are 27 deputies in the Territory. The average fees for the year are $72.38 for each deputy.

The game and fish warden reports 41 prosecutions, $1,463.25 imposed in fines, and $4,365 worth of game confiscated during the year.

The grain inspector reports 4,508 cars of grain inspected and $1,577.80 received in fees therefor.

Oklahoma was the first Territory to secure a revenue from school lands. In 1891 the governor, by special act of Congress, was granted authority to lease the lands reserved to the Territory for school purposes and the net revenue above all expenses of the administration of this department of business, protection of lands, securing of indemnity lands, etc., has been over $2,000,000. During the past year alone the

receipts from the rental of public-school and other reserved lands were $361,987.72, or an average of a little less than $1,000 per day. Of this amount $244,455.56 was received from the lands reserved for common school purposes and went into the common school fund to be distributed per capita to the school districts; $55,159.26 was received from the lands reserved for the benefit of the higher institutions of learning; $55,641.10 from those reserved for the public buildings, and $6,731.80 from special lands in Greer County. The total acreage of lands reserved by different acts of Congress and turned over to the Territory to become the property of the future State, and the revenue therefrom in the meantime to be received by the Territory, was 2,050,876 acres, practically all of which is under lease.

There have been 66 applicants for the examination to practice medicine according to the present law; 40 per cent of all those applying for license failed to reach the required grade in one or more of the branches used in the test, and were not issued a license. Applicants desiring to practice the profession of pharmacy in the Territory are required to submit to an examination showing their fitness to compound and dispense drugs. During the past year the board has held four meetings and 114 candidates have taken the examination. Of these 55 have passed the required general average of 75 per cent and received certificates of registration.

Persons desiring to practice the profession of dentistry in the Territory are required by law to either file for record a diploma from a recognized college of dentistry or to pass a satisfactory examination before the board of dental examiners. Two hundred and forty dentists are licensed to practice in the Territory up to the present time; the number registered during the past year is 40.

The Oklahoma live stock sanitary commission was organized for the purpose of protecting the live-stock interests of the Territory by stamping out and preventing contagious diseases and enforcing quarantine regulations. The cattle business being by far the largest live-stock industry in the Territory, and Texas or tick fever being the most fatal and formidable disease to cattle, on account of close proximity to the natural habitat of the fever tick, quarantine laws have been enacted and quarantine lines thrown around the Territory to prevent the introduction of southern cattle.

The Territory also has a law which requires the inspection of all animals the flesh of which is to be sold for food, and none but healthy animals are allowed to be slaughtered. This work is carried on by special inspectors under the control of the commission; all marks or brands of such animals must be recorded. This law insures wholesome meat to the people and also serves as a check to thievery and as a means of identifying stolen stock. There have been some twenty prosecu-

tions for the violation of this law in the last year, nearly all resulting in the conviction of the parties accused.

For the year ended June 30, 1904, 35,176 cattle and 29,923 hogs were inspected and slaughtered; 42 head of cattle and 31 hogs were condemned as being unfit for food. There have been returned for taxation from the various counties 328,352 horses; 70,048 mules and asses; 1,057,020 cattle; 35,735 sheep; 287,368 swine.

The business of the courts during the past year has been greater than in former years. The supreme court docketed during the year 197 cases, and disposed of 136 cases. The seven district courts docketed during the year 7,442 cases, and disposed of 6,065 cases, leaving on the docket 4,546 cases June 30, 1904.

The National Guard is composed of 803 members. The infantry companies and the engineer corps were supplied with the new service magazine rifles, khaki uniforms, and shelter tents. Each officer has a Colts revolver. Oklahoma's share of the million dollar appropriation (under sec. 1661, Revised Statutes) for the past year was $13,103.03, to which was added $8,657.48 in allotments under the act of March 2, 1903. This entire amount was wholly consumed in requisitions for articles of equipment.

In 1901 the legislative assembly of Oklahoma appropriated the sum of $20,000 to be used in placing an exhibit for the Territory at the World's Fair at St. Louis, Mo. The legislative assembly in 1903 made an additional appropriation of $40,000. A State building was erected on the fair grounds, which is very creditable to Oklahoma. Exhibits have been installed in the agricultural, horticultural, educational, and mining departments.

In regard to statehood the governor states:

> Oklahoma should have statehood. It would be a matter of justice to grant it and a matter of injustice to longer withhold it. Seven hundred thousand citizens in this Territory are deprived of the rights of elective government. The people of Oklahoma have in the past demonstrated their capacity to govern themselves. For over one year in the early days the people were without organized government, yet they were a law unto themselves. The law-abiding instincts of the American citizen prevailed and crime and wrongdoing were rare exceptions to the splendid, orderly conduct of the people who laid the foundation of the commonwealth of Oklahoma.
>
> In No Mans Land, now Beaver County, the people lived for nearly ten years in a land without law, and absolutely free from the penalties of courts, yet society was pretty well protected and the rights of the residents generally respected. These conditions were typical illustrations of the sentiment for law and order which always has prevailed in Oklahoma. The people of this Territory have the moral qualifications that entitle them to statehood.
>
> From an educational standpoint they are eminently fitted for self-government. The Territory maintains seven educational institutions of higher learning. There are eight institutions of advanced learning in the Territory under control of individuals and benevolent institutions. There are common schools maintained in every neighborhood. More money is expended for education than for all other public

interests. The advancement in public improvements has been phenomenal. It is believed that in rapid development Oklahoma stands unrivaled. The valuation is about $540,000,000, if everything is estimated at its real or cash value. With 700,000 people, $540,000,000 worth of property, the major portion of our public expenses bestowed upon our schools, and unprecedented advancement along all lines of enterprise, it seems that Congress should give the people of the Territory authority to exercise in full the rights of American citizens. The flag of the Republic will not be complete until upon its field of blue is placed the rising star of Oklahoma.

The question of the admission of the Territory as a State is one wholly within the jurisdiction of Congress, and this Department can, therefore, do no more than direct your attention to the views of the governor in the premises.

ANADARKO, HOBART, AND LAWTON TOWN-LOT FUNDS.—The details of the opening of the Kiowa, Comanche, and Apache lands in Oklahoma, and of the sales of the town lots in Anadarko, Hobart, and Lawton, the county seats of Caddo, Kiowa, and Comanche counties, respectively, were fully set forth in my annual report for 1901. The net amounts derived from said town-lot sales were as follows: At Anadarko, $186,910.47; at Hobart, $130,936; at Lawton, $412,355.38. These sums were promptly deposited by Assistant Commissioner (now Commissioner) W. A. Richards, of the General Land Office, in the United States subtreasury at St. Louis, where the funds have remained to this date, except for the disbursements therefrom under the act of March 3, 1901 (31 Stat. L., 1093–1094), and the act of June 30, 1902 (32 Stat. L., 506).

The said act of March 3, 1901, provided in part as follows:

> The receipts from the sale of these lots in the respective county seats shall, after deducting the expenses incident to the surveying, subdividing, plotting, and selling of the same, be disposed of under the direction of the Secretary of the Interior in the following manner: A court-house shall be erected therewith at such county seat at a cost of not exceeding ten thousand dollars, and the residue shall be applied to the construction of bridges, roads, and such other public improvements as the Secretary of the Interior shall deem appropriate, including the payment of all expenses actually necessary to the maintenance of the county government until the time for collecting county taxes in the calendar year next succeeding the time of the opening. No indebtedness of any character shall be contracted or incurred by any of said counties prior to the time for collecting county taxes in the calendar year next succeeding the opening, excepting where the same shall have been authorized by the Secretary of the Interior.

The act of June 30, 1902, increased the amount appropriated for court-houses in each town to $30,000 each, and also set aside, from the several town-lot funds, "for public waterworks, schoolhouses, and such other municipal improvements as may be advisable and advantageous to the inhabitants of said towns," the following sums: For the town of Lawton, $150,000; for the town of Anadarko, $60,000, and for the town of Hobart, $50,000.

The following statements exhibit the amounts appropriated and disbursed from the several town-lot funds, and their condition at the close of business October 31, 1904:

	Amount appropriated.	Amount expended.	Amount remaining.
ANADARKO TOWN-LOT FUND.			
Caddo County:			
For a county court-house	$30,000.00	$142.56	$29,857.44
For other county improvements	95,147.06	19,698.81	40,356.88
For maintenance of county government		35,091.37	
City of Anadarko:			
Water works	60,000.00	16,286.51	35,833.69
School houses		7,879.80	
Total	185,147.06	79,099.05	106,048.01
HOBART TOWN-LOT FUND.			
Kiowa County:			
For a county court-house	30,000.00	128.04	29,871.96
For other county improvements	49,136.29	11,689.10	12,637.63
For maintenance of county government		24,809.56	
City of Hobart:			
Waterworks	50,000.00	2,397.44	47,183.15
Schoolhouse		419.41	
Total	129,136.29	39,443.55	89,692.74
LAWTON TOWN-LOT FUND.			
Comanche County:			
For a county court-house	30,000.00	97.14	29,902.86
For other county improvements	230,591.97	21,706.93	179,681.74
For maintenance of county government		29,203.30	
City of Lawton:			
Waterworks	150,000.00	24,315.34	123,394.94
Schoolhouses		179.81	
Sewers		2,109.91	
Total	410,591.97	77,612.43	332,979.54

After providing for the probable total cost of construction, supervision, etc., of works now under contract, there remain available at the present date for additional public improvements, other than county court-houses, in the several cities and counties named, the following approximate balances:

County of Caddo	$29,477.36
City of Anadarko	6,214.49
County of Kiowa	12,586.95
City of Hobart	17,098.97
County of Comanche	138,851.89
City of Lawton	22,576.65

To carry on the work in Oklahoma, an engineer in charge and several assistant engineers of the reclamation service were detailed and have been on duty, during the past two years, at each of the three cities of Anadarko, Hobart, and Lawton. They have designed a

number of important improvements, including the waterworks and the storm water and sanitary sewers at Lawton, and the steel highway bridges in Caddo and Comanche counties, and have given careful inspection and supervision to the various public improvements under construction in the respective cities and counties.

The progress of the respective public improvements, since the date of my last annual report, may be stated briefly as follows:

STEEL JAIL CELLS AT ANADARKO.—A tool-proof jail cage containing six cells, also a temporary wooden building to cover the same, were completed at Anadarko in December, 1903. The total cost of the jail cage, including supervision, was $5,468.94, and of the temporary wooden building $315.01.

CADDO COUNTY BRIDGES.—Six steel highway bridges have been erected in Caddo County, and contracts have been awarded and executed for four additional steel highway bridges to be finished within the coming five months.

SCHOOLHOUSE AT ANADARKO.—A contract for erection of the eight-room schoolhouse at Anadarko was awarded to Kean & Boogher, of Hobart, Okla., in the sum of $13,680. The formal contract was executed by that firm on February 15 and returned to the Department with the required bond on April 15. Construction was begun May 19. It is expected that the building will be finished within the period allowed in the contract.

ANADARKO WATERWORKS.—Plans and specifications for waterworks for the city of Anadarko were approved December 12, 1903; the formal recommendation of the city council for construction of the works was received February 19. Three days later an advertisement was published inviting proposals on the work. On March 29 the bids were opened, and on April 23 contract was awarded to the lowest bidders, Messrs. W. W. Cook & Son, of Junction City, Kans., in the sum of $35,465. This firm executed the contract May 9, furnished bond June 6, received their first shipment of material at Anadarko July 6, distributed the same through the city during July, and began the work of actual construction in the early part of August. During the remainder of August, and since that time, the work has progressed rapidly, and at the date of this report the plant is nearly ready for operation.

STEEL JAIL CELLS AT HOBART.—In March, 1904, the temporary building to cover the steel jail cells at Hobart was completed by the contractor, and in April the cells, consisting of two misdemeanor cells and one tool-proof cage of four cells, with all plumbing and necessary fixtures, were also completed. The total cost of the steel cells, including advertising and supervision, was $4,437.46, and of the temporary shelter for the same, $153.55.

WATERWORKS AT HOBART.—An advertisement inviting bids on construction of the Hobart waterworks was published beginning February

15, 1904. The bids were opened at Hobart on March 30. A contract was awarded April 11, 1904, to McQuatters Plumbing and Machine Company, of Hillsboro, Tex.; was executed by that company on April 28, and was received by the Department, with required bond, on May 23. Actual construction of the works was begun June 20, and is very nearly completed at this date.

The contract price of the works is $42,675, of which $17,500 has been paid by the city, being proceeds of the sale of city waterworks bonds of that amount. The amount payable by the city having all been applied on the contract, the remainder is payable from the fund derived from the sale of town lots at Hobart in August, 1901.

Comanche County bridges.—Seven steel highway bridges have been erected in Comanche County, and contracts have been executed for the erection of 22 additional st el highway bridges, to be finished within the coming five months.

Waterworks at Lawton.—An advertisement for bids for construction of the Lawton waterworks was published, beginning February 16, 1904; the bids were opened at Lawton on March 28. A contract was awarded April 26, 1904, to McQuatters Plumbing and Machine Company, of Hillsboro, Tex., in the sum of $76,983; was executed by that company on May 14, and was received by the Department with required bond on May 23.

Actual construction of the works was begun June 21, and is very nearly completed at this date.

Sanitary and storm-water sewers at Lawton.—In January and February, 1904, the necessary surveys were made and plans drawn by engineers of the reclamation service for the sanitary sewers and storm-water sewers in the city of Lawton, and in March the specifications were completed. On March 23 these plans and specifications were accepted by the city council, and on April 18 were approved by the Department.

The work was advertised; bids were opened May 25, but all were rejected. The work was again advertised, and the second lot of bids was opened June 25. The contracts for the work were awarded as follows: For the sanitary sewers, August 31, to J. O. Severns, of Guthrie, Okla., at $32,199.06; and for the storm-water sewers, September 22, to Taylor & Moore, of Houston, Tex., at $9,858.75.

For the sanitary sewers the contract was executed September 3, and for the storm sewers, October 11, 1904. In both cases the work is to be completed within 120 days after execution of the contract.

Court-houses, jails, and schoolhouses.—Bids were opened at Lawton, Okla., on October 10 for construction of two schoolhouses at Lawton, one schoolhouse at Hobart, and a court-house and a jail at each of the cities of Lawton, Hobart, and Anadarko, in Oklahoma. These bids are now before the Department and are under considera-

tion. It is expected that contracts for nearly all of these buildings can be awarded promptly and that construction of some of them will be started before the end of the present calendar year.

Porto Rico.

Commissioner of the interior for Porto Rico.—Section 24 of the act of Congress approved April 12, 1900, entitled "An act temporarily to provide revenues and a civil government for Porto Rico, and for other purposes," provides as follows:

> That the commissioner of the interior shall superintend all works of a public nature, and shall have charge of all public buildings, grounds, and lands, except those belonging to the United States, and shall execute such requirements as may be imposed by law with respect thereto, and shall perform such other duties as may be prescribed by law, and make such reports through the governor to the Secretary of the Interior of the United States as he may require, which shall annually be transmitted to Congress.

The report of the commissioner of interior for Porto Rico, W. H. Elliott, shows that the department under his supervision has remained organized, as stated in his last report, with the exception that on April 1, 1904, the bureau of health was by legislative enactment transferred to the administrative control of the director of health, charities, and corrections, a newly created office. At the same session of the legislature the bureau of agriculture was abolished, to take effect July 1, 1904, and a division of disbursements and accounts was created in the department of the interior, doing away with the position of a disbursing officer in each bureau, as heretofore required.

The only public lands and buildings now belonging to the Federal Government are such as were reserved by the several proclamations of the President for the use of the Army, Navy, and other public purposes, and over which the insular government has no control. The work of the bureau of public lands has been confined to the inspection and classification of the most important tracts of land belonging to the people of Porto Rico and to the investigation of titles to property claimed by individuals. The labor performed and the results obtained have been important in the establishment of a basis for future surveys, for which, doubtless, the legislative assembly will make ample provision; such a course is necessary as an assurance of good title and inducement to possible investors in real estate, many of whom have refrained from buying through fear of loss or expensive lawsuits.

The work of road building has been pushed steadily forward during the past year, and the results, to one with knowledge of the conditions as they were when American occupation of Porto Rico began, and has been intimately connected with the development of the system to date, are highly gratifying. The trust fund, being the refund of customs revenue collected on importations from Porto Rico into the United

States prior to the establishment of civil government and appropriated by Congress for the benefit of the people of Porto Rico, amounting finally to about $2,400,000, has been drawn upon from time to time, chiefly for construction and repair of roads and bridges and for building schoolhouses, until there remains an available balance of only about $225,000.

It is the opinion of the governor and heads of departments, through whom allotments are made, that it would be wise to husband a portion of these means as an emergency fund. Should this policy prevail the further construction of insular roads must end with the expenditure of the present allotments—the balances of which, on July 1, aggregated about $120,000—as the insular revenue, under present levies, will not warrant a larger appropriation for roads than that now provided for maintenance—about $230,000. The idea of a loan for public improvements has been favorably discussed—indeed a loan bill has been presented at each succeeding session of the legislative assembly since the inauguration of civil government and has regularly passed the house of delegates; but while it was in name a bill to provide for public improvements, its purpose and provisions were to obtain money for agricultural loans, with the hope to thereby relieve the depressed interests, and particularly to revive the coffee industry.

The majority of the council members deemed it unnecessary to make a loan for public improvements so long as the trust-fund balance admitted of the construction of roads, bridges, and schoolhouses as rapidly as the facilities at hand would permit, and they could not agree that the policy of borrowing money by the government to be loaned to individuals was either wise or safe, particularly as it was susceptible of easy demonstration that the people who really needed financial assistance would be the last to receive it, hence the measure was regularly voted down in the council. The "country road" law, as time advances and the supervisors are gaining in knowledge and experience, is producing more satisfactory results. By this law the island is divided into seven districts coextensive with the election districts. Each district has three road supervisors, who have charge of the rural and vicinal roads and trails, and the boards are under the general control of the commissioner of the interior, to whom they must submit for approval their projects and estimates for road repair and improvements.

As a revenue the insular treasurer is required to pay over to the treasurer of each board of road supervisors 8 per cent of the municipal taxes collected in the district. This fund amounts to about $50,000 a year, and while it is not large it is nevertheless sufficient for a considerable amount of road repair and maintenance. Meantime this department, from trust fund allotments, has constructed or put in

good condition for traffic a number of the most important rural roads in the several districts, so that the supervisors have only the expense of maintaining them, which they can easily do. As a further help to the road districts, and certainly a very reasonable and just proposition, it is proposed to enact a law providing for the imposition of a poll tax on every able-bodied male over the age of 21 years, the tax to be the moderate sum of $1, or two days' labor on the roads, as its equivalent.

The report of the acting superintendent of public works and the reports of his subordinates in charge of the several branches of the bureau, show clearly the condition of affairs in that all-important division of the public service, and present in detail the story of progress made in the material development of the island's most valuable interests. There were under insular maintenance on July 1, 573 kilometers of completed roads, 305 of which have been constructed since October 18, 1898. In addition to the above, the government has built and turned over to the district supervisors 42.75 kilometers of vicinal road. Prior to January 1, 1905, there will be completed, not included in the above, of insular roads 111.8 kilometers, of vicinal roads 14 kilometers, which will make a grand total of 473.55 kilometers of road constructed during six years of American occupation as against 286 kilometers during the four hundred years of Spanish control.

The completion of the road from Arecibo to Ponce, 85 kilometers in length, is worthy of special mention. Construction was begun by the Spanish authorities many years ago; at the date of American occupation they had built about 20.5 kilometers. The military authorities promptly took up the work, and the insular government has vigorously prosecuted it. On July 1 the last section was finished, and the highway is open to traffic. This road shortens the travel time between San Juan and Ponce at least three hours. It is of first-class construction throughout, and presents a panorama of the most magnificent scenery, rivaling the views of any of the famed roads of Europe. As its attractions become known it will undoubtedly grow in favor with tourists, who will find it more attractive and beautiful than the popular so-called military road.

The report covers fully and interestingly the development and operations of the insular telegraph system during the past year. The lines have been extended, several stations have been added, and the business, both in volume and receipts, has increased materially. In the beginning the serious problem to be solved in connection with the establishment of the telegraph system seemed to be the probable inability to interest native young men and boys to the extent of inducing them to study and practice the art; the idea of establishing a school for young ladies was the outgrowth of apprehension that young men and boys would not respond to the inducements offered. The school evidently proved an incentive to both sexes, with the result

that operators, male and female, and good ones, are sufficiently plentiful for the requirements of the service. The last legislature made fairly liberal provision for the extension of the system, but not sufficient to cover all of the lines projected in the plans of the bureau.

As stated in the report, the bureau of agriculture and mines was abolished by act of the last legislative assembly, but no one seems able to offer a sufficient explanation of the action. That there was need for economy in the construction of the budget was a plain enough proposition, but that a bureau so useful to the agricultural interests, the basic structure of all prosperity to the island, and requiring only small provision, should be abolished does not, in the opinion of the commissioner, seem reasonable or wise. The bulletins issued by the bureau contained carefully selected matter of practical value; the growing demand for the bulletins and increasing correspondence elicited by the contents proved their value to the farmers. The commission expresses the hope that the next legislature will recognize the justice of providing for the continued publication of these useful pamphlets.

The many valuable records of the several departments have been properly classified, indexed, and filed, and it is now an easy matter for interested parties to trace quickly and accurately the history of any subject of public concern.

In concluding his report the commissioner repeats the tribute he paid in his report for 1902–3 to the loyalty, efficiency, and integrity of the employees of the department of the interior. Nearly all of them, it is stated, are natives, but in their grasp of duties under changed conditions, their devotion and quickness of comprehension, they have proven themselves fully competent and wholly reliable, entitling them to the respect, regard, and confidence of the head of the department.

COMMISSIONER OF EDUCATION FOR PORTO RICO.—Section 25 of the act of Congress approved April 12, 1900, entitled "An act temporarily to provide revenues and a civil government for Porto Rico, and for other purposes," provides as follows:

> That the commissioner of education shall superintend public instruction throughout Porto Rico, and all disbursements on account thereof must be approved by him; and he shall perform such other duties as may be prescribed by law, and make such reports through the governor as may be required by the Commissioner of Education of the United States, which shall annually be transmitted to Congress.

The report of Dr. Samuel McCune Lindsay, the commissioner of education for Porto Rico, covers the school year of thirty-five weeks, beginning September 28, 1903, and ending June 17, 1904, while the statistics run from July 1, 1903, to July 1, 1904, to correspond with the fiscal year of the government departments. The commissioner remarks that the progress for the year consists more in general

improvement in the quality of the work done, "the solidifying of the entire system," and the development of industrial studies, manual training, and elementary agriculture, than in the increased number of schools, the limitations of the appropriations forbidding further extension in that direction at present.

The schools of primary grade constitute the great majority of all the schools and consequently receive the major portion of the appropriations. In them the children learn reading and writing, in both English and Spanish, and the elements of arithmetic, geography, history, drawing, and handwork. Beginning their schooling at 5 or 6 years of age, most of the children are unable to attend school longer than two or three years on account of poverty. In the rural districts the work of each school is all done by one teacher, who, however, usually divides the pupils into two or three groups, while in the towns the schools are all graded, there being eight grades in all, but the four upper grades are usually so thinly attended that they are combined and taught by one teacher. A pupil who passes the fifth grade is entitled to enter one of the industrial schools, where he can get a practical training in some trade. A graduate from the eighth grade passes to a high school course of four years, which fits him for an American college or a professional school. So far very few have been able to avail themselves of high school privileges.

The following figures are taken from the statistical table contained in the report:

1. Total population of island:	
Census of 1899	953,243
Estimated 1904 (basis, census of 1883 and 1899)	1,012,775
2. Total school population (5 to 18 years):	
Census of 1899	322,393
Estimated 1904 (basis, census of 1883 and 1899)	393,786
3. Number of common schools open during the year (graded, 497; rural, 563)	1,060
Number of special schools open during the year	53
Total number of schools open during the year	1,113
4. Maximum number of buildings in use for schools during the year (town, 140; rural, 531; agricultural, 14)	658
5. Total number of different teachers employed in the common schools during the year:	
White—	
Males	664
Females	411
Total	1,075
Colored—	
Males	79
Females	50
Total	129

5. Total number of different teachers employed in the common schools during the year—Continued.	
White and colored—	
Males	743
Females	461
Total	1,204
Total number of different teachers employed in the special schools during the year	61
Total number of different teachers employed in all schools during the year	1,265
6. Total number of American teachers employed in the common schools during the year:	
Males	47
Females	92
Total	139
7. Number of pupils enrolled in all schools, including special schools:	
White—	
Males	27 847
Females	19,242
Total	47,089
Colored—	
Males	9,547
Females	6,920
Total	16,467
White and colored—	
Males	37,394
Females	26,162
Total	63,556
Including reenrollments, or duplicates	2,388
Total number of different pupils actually enrolled	61,168
Total number of different pupils actually enrolled in the common schools	57,683
Total number of different pupils actually enrolled in the special schools	3,485
8. Average daily attendance during the year for the whole island in the common schools	39,928
Average daily attendance during the year in the special schools	1,870
Average daily attendance during the year in all schools	41,798
9. Average number of days each school was actually kept:	
Common schools	157
Special schools	156

10. Per cent of estimated total population enrolled in all schools	6.3
Per cent of total population (census of 1899) enrolled in all schools	6.7
11. Per cent of estimated school population enrolled in all schools	16.1
Per cent of school population (census of 1899) enrolled in all schools	19.7
12. Per cent of estimated total population attending daily	4.1
Per cent of total population (census of 1899) attending daily	4.4
Per cent of total number of pupils enrolled during the year attending daily:	
Common schools	66.5
Special schools	53.3
All schools	65.7
13. Per cent of estimated school population attending daily	10.6
Per cent of school population (census of 1899) attending daily	12.9
14. Per cent of colored pupils in the total enrollment	25.9
15. Per cent of colored teachers in the total number employed, not including teachers in special schools	10.8
16. Per cent of men in teaching force, not including teachers in special schools	61.7
17. Per cent of increase in the average enrollment per school over the average enrollment per school during 1902–3 (not including special schools)	26.1
Per cent of increase in the average daily attendance per school over the average daily attendance per school during 1902–3:	
Common schools	5.6
Special schools	40.0
Per cent of increase in the average daily attendance in all schools for the whole island over the average daily attendance in all schools for the whole island during 1902–3	14.8

18. Number of pupils enrolled in the private schools of the island:	
White—	
Males	1,093
Females	2,622
Total	3,715
Colored—	
Males	437
Females	689
Total	1,126
White and colored—	
Males	1,530
Females	3,311
Total	4,841
19. Per cent of estimated total population enrolled in the private schools	.5
Per cent of estimated school population enrolled in the private schools	1.2
Per cent of population enrolled in the public schools enrolled in the private schools	7.6
Per cent of colored pupils in the enrollment of the private schools	23.0

20. The monthly salary of teachers, as fixed by law during the year 1903–4, has been as follows:[a]	
Rural teachers—	
Second class	$30.00
Third class	25.00
Graded teachers, and teachers of English—	
Second class	50.00
Third class	45.00
Principal teachers—	
Second class	75.00
Third class	70.00
To all of which amounts are added allowances for monthly house rent as follows:	
Rural teachers—not less than $3 nor more than	8.00
Graded, principal, and special teachers—not less than $10 nor more than	15.00
21. Estimated value of all insular school buildings[b]	507,012.21
22. Average cost of the common schools, not including special schools (but including cost of administrative expenses of the department of education in the insular government, and not including the expenditures of the municipalities), has been as follows:	
Per pupil enrolled	8.17
Per pupil attending	11.80
Average cost of all schools, including special schools (and including the administrative expenses of the department of education in the insular government, but not including the expenditures of the municipalities), has been as follows:	
Per pupil enrolled	9.12
Per pupil attending	13.61
23. Average cost of the common schools, not including special schools, to the municipalities (in addition to the above cost to the insular government), has been as follows:[c]	
Per pupil enrolled	3.17
Per pupil attending	4.57

It appears that there was an increase in the average daily attendance at all schools of 14.8 per cent over 1902–3, while the maximum number of schools opened during the scholastic year 1903–4 was 1,113 as compared with 1,014 the previous year, with 1,265 teachers against 1,116 the preceding year and 939 in 1901–2. Of the average number of teachers (1,172) at work in 1904, 139 were Americans, chiefly occupied in teaching English. This makes a proportion of 1 American to about 8 Porto Ricans.

The average daily attendance in all schools was 41,798, while for the previous year it was 36,308. The percentage of the total population of the island enrolled in the schools was 6.7, and this was only 19.7 per cent of the school population according to the census of 1899.

[a] Special teachers as per special contract.

[b] Including every expense incurred within the last five years in connection with the acquisition of property by the insular government and with the erection and maintenance of school buildings.

[c] The municipalities incurred practically no expense for the special schools.

It is a still smaller proportion of the estimated present school population, viz, 16.1 per cent, while the proportion of daily attendance to the estimated school population was only 10.6 per cent. This means that less than one-fifth of the school population of Porto Rico is reached by the schools and only one child in ten is in actual attendance. This unfavorable condition is due to the lack of funds from the island resources for school purposes.

The preceding figures apply to the public schools only. The department of education for the island was able this year to collect statistics of the private schools for the first time. From these it appears that nearly 5,000 children, or less than one-twelfth the enrollment of the public schools (61,168), attended the private schools. The government of the island is therefore left "face to face," in the words of the report, "with the problem of four-fifths of the children of Porto Rico (66,160 in school out of a school population of 393,786 children) growing up without the opportunities of a common school education."

The visit of 540 Porto Rican teachers to the United States in the summer of 1904 to attend summer schools at Harvard and Cornell was an interesting episode in the educational history of the island. The idea of such pedagogical excursions originated with Mr. Alexis E. Frye, while superintendent of education in Cuba, who conducted a body of Cuban teachers to the United States for study and observation. In the case of the Porto Rican teachers the War Department provided transportation to and from the island, not including subsistence, while the remaining expenses were defrayed by contributions from the teachers themselves, who taxed themselves cheerfully for the purpose at the cost of much personal sacrifice, and from subscriptions raised in Boston, New York, and Philadelphia. The party visited the principal large eastern cities, and was divided into two sections for study, one attending the summer courses at Harvard and the other at Cornell.

The University of Porto Rico was established by an act of the island legislature in March, 1903, which granted a charter and provided for a board of trustees, of which the governor was made honorary president and the commissioner of education president. The commissioner was also made chancellor of the university. The act turned over to the trustees the insular normal school and several buildings, including one for an agricultural station, and the normal school thus became a department of the university. The university therefore may be called a State institution. It was hoped that professional departments of law and medicine might be opened by external aid, to offer facilities to Porto Rican students to study those branches at home instead of being compelled, as they now are, to undertake the expense of a professional education in Europe or the United States. The idea is also advanced

that a university established in Porto Rico might become a center of higher education for all the Central and South American States. Since the passage of the insular university law of March, 1903, an act providing for the extension of the Morrill and Hatch acts to Porto Rico, by which the university will receive from $30,000 to $40,000 a year from the Federal Treasury, for the development of its agricultural department, has been introduced into both Houses of Congress and has met with little or no opposition.

The commissioner concludes his summary with a brief historical review of the condition of public education in the island, and, returning to the lamentable deficiency of insular funds to meet the expenses demanded for the schools—the best which can be done being to give school advantages to only one-fifth of the children—he declares that there is only one solution of the difficulty, viz, national aid from the Treasury of the United States for the public schools of Porto Rico.

Speaking of American teachers, Commissioner Lindsay says that they are engaged usually after considerable correspondence and upon filling up satisfactorily application blanks which require very detailed statements as to the character, attainments, and experience of the applicant. Fifty-seven of the corps the past year were graduates of colleges or universities, and the rest had received a normal or high school training. The majority of them are employed as teachers of English, the others in teaching high-school subjects, or in industrial schools, and in teaching music and drawing.

Twenty-five young Porto Ricans are studying in the United States and are maintained by funds appropriated by the insular government. They are distributed among a number of universities and colleges and at certain law, medical, and technological schools. Besides these students, 20 young men and women are awarded scholarships with the understanding that they are to be sent to a technical or industrial school. Under this provision 13 are at the Tuskegee Normal and Industrial Institute, Tuskegee, Ala., 3 are at Tongaloo University, Tongaloo, Miss., and 1 at Jasper, N. Y.

The past year witnessed the inauguration of the regular teachers' institute, and meetings were held in 18 places, at which addresses were made by the commissioner and visitors from the United States, besides the well-known Spanish-American writer on educational subjects, Señor Fernandez Juncos, of San Juan, P. R.

One item in the report, which should not be passed unnoticed, is the acknowledgment which Commissioner Lindsay makes for contribution of clothing to the children of Porto Rico who were unable to attend school on account of poverty. This clothing was made in the sewing classes of several schools in Philadelphia It appears that 278 children were able to attend school by this aid who would otherwise have been deprived of that privilege.

INSPECTORS OF COAL MINES IN THE TERRITORIES.

By act of Congress approved March 3, 1891 (26 Stat. L., 1104), the President was authorized to appoint, at an annual compensation of $2,000 each, a mine inspector in each organized and unorganized Territory of the United States wherein were located coal mines the aggregate annual output of which would be in excess of 1,000 tons per annum. Appropriation is now made annually by Congress for two such inspectors, one of the Indian Territory and the other of the Territory of New Mexico.

INDIAN TERRITORY.—William Cameron, the mine inspector, reports that the production of coal in the Indian Territory is steadily increasing and new mines are constantly being opened.

During the year the inspector has made careful and thorough inspection of the several mines operated within the Territory. He states, however, that owing to the large number of mines now being operated, as well as to the frequent calls upon him to make special inspections, and the necessity of his investigating into the cause of accidents, it is not possible for him to make as many inspections as he should desire of the various mines in the Territory. He has endeavored, however, to visit each mine in the Territory at least once during the year; he has carefully investigated every accident which occurred, and has responded with reasonable promptness to every special call made upon him to inspect a particular mine. Most of the requests for special inspections came from representatives of the United Mine Workers of America, and in every case such requests were complied with, and where the result of the inspection showed defects in the conditions of the mine such defects were called to the attention of the operators with the demand that they be speedily remedied. As a general rule the inspector says the mine operators promptly complied with his requirements. In this connection the inspector calls attention to the necessity of cooperation with his efforts on the part of both the miners and the operators in order to secure the best results.

With regard to the providing of additional escape ways for the men, as required by law, there have been several applications by the operators to be allowed a specified time in which to make these escape ways, which applications have in general been granted by the Department.

On July 27, 1903, the inspector forwarded the application of the Coalgate Company for twelve months' time in which to sink an air shaft and to complete an escape way for the miners in their shaft No. 5, at Coalgate, Ind. T. On August 25, 1903, the application was granted by the Department, and on February 26, 1904, the inspector reported that said company had completed the necessary escapement and ventilating shaft, and that the same met the requirements of the act of March 3, 1891.

On April 9, 1904, the inspector forwarded, with favorable recommendation, an application from the superintendent of the Le Bosquet Coal Mining Company for three months, time in which to complete an escape way to their mine at Hughes, Ind. T. On April 14, 1904, the application in question was granted, and on July 22, 1904, the inspector reported that the work had been completed, and that the same met the requirements of law.

On May 20, 1904, the inspector forwarded an application of the Southwestern Development Company for eight months' time in which to make a connection between the slope of its new No. 4 mine and the bottom of the shaft of its No. 12 mine, near Coalgate, Ind. T. This application was granted May 25, 1904. On June 9, 1904, the inspector called attention to the fact that the above connection would furnish a second escapeway to No. 4 mine, as well as to mine No. 12; and since it would not be practicable to construct an additional opening for No. 4 mine prior to the completion of the above named connection, he recommended that the company be allowed eight months from May 25, 1904, in which to provide the additional escapeway required by law for No. 4 mine. On June 9, 1904, this application was granted.

On July 8, 1904, the Department granted the application of the Rock Island Coal Company for an extension for four months of the time in which to complete the escapeway in their shaft No. 7.

The mines in the Territory are generally well constructed and provided with proper machinery. The inspector states that in most instances he has also found that an adequate amount of ventilation has been furnished. Very few furnaces are used for ventilating purposes, and these are only in the small mines at early stage of their operation. He has found at times, however, that through oversight or carelessness, the abundant ventilation furnished has not been properly distributed to the working faces. In such cases he has called the attention of the mining company to the matter, and has secured the adoption of an improved system of ventilation, without the necessity of a formal demand from the Department being served upon the mine operators. The inspector believes that these improvements have lessened the number of accidents in the mines. In the few cases in which furnaces are used for ventilation the inspector says that the shafts are not in any manner used as escapeways, all escapeways required by law being either already completed or now being under construction.

Metal speaking tubes or telephones are in use in the mines from top to bottom of shafts. Speaking tubes have been found practically worthless where slopes have been driven considerable distances, and in such cases telephones have been substituted and found to work admirably.

Approved safety catches and sufficient cover overhead are provided on all cages used in lowering or hoisting persons in shafts. The

inspector states that he inspects the machinery, ropes, etc., on each visit. Several times he has had occasion to call attention to defects in these appliances, and such defects were then remedied.

The engineers and mechanics operating engines, hoisting apparatus, and other machinery, the inspector believes, are an exceptionally good class of men, competent and sober.

Shot firers in mines wherein 20 or more miners are at work have been duly provided. The sprinkling of entries and passageways as required by law has generally been provided for, but in some instances the inspector has had occasion to call attention to a neglect of this duty.

The number of accidents which occurred during the year was 99, of which 30 were fatal. For the preceding year the number of accidents was 116, of which 33 were fatal. Embraced in the inspector's report is a statement showing the number of accidents resulting from each of the various causes during the year. The greatest decrease in the number of accidents from any one cause during the year was in those resulting from gas explosions, there being 53 of these during the year 1902–3, of which 13 were fatal, and only 9 during the current year, of which 2 were fatal. The inspector expresses his belief that the reduction of the number of accidents resulting from the ignition of gas is due to the fact that the disasters of previous years have taught both operators and miners the absolute necessity of strictly complying with the law in regard to ventilation, and of taking every possible precaution to prevent accidents of this character.

The number of accidents occurring in the operation of pit cars, and of those resulting from the falling of roofs, show an increase during the year. The number of accidents due to falling roofs was 32, of which 8 were fatal. The inspector states that the greater part of these could have been prevented by the exercise of care; but that familiarity with danger makes the expert miner careless, so that he will sometimes linger under a dangerous piece of rock, neglect to set up a needed prop, or otherwise fail to take necessary precautions. The number of accidents occurring in the running of pit cars was 26, of which 4 were fatal. The inspector states that while the cages in all hoisting shafts were furnished with safety catches, the pit cars running on steep slopes are not always provided with drags, and occasionally when drags are furnished they are thrown away as an encumbrance, so that runaway cars sometimes result. Other accidents were due to unauthorized persons jumping on or off while the cars were in motion.

The only other serious causes of accidents during the year were the firing of badly prepared shots and the use and storage of blasting powder in the mines. With a view to reducing as far as possible the number of accidents due to these causes the inspector made an effort

during the year to have the operators and the miners appoint a joint committee for the purpose of formulating rules regulating the use of shots and powder in the mines; but while a meeting was held at which he gave his views upon the subject, he has so far not been able to induce the parties in interest to take any concerted action in the matter. A detailed report of all the accidents occurring during the year will be found in the inspector's report.

The total number of men and boys employed in the mines of Indian Territory for the current year was as follows:

Average number of men and boys over 16, underground	7,009
Average number of boys under 16, underground	185
Average number of men and boys over 16, above ground	1,033
Average number of boys under 16, above ground	33
Total	8,260

The average number of men and boys employed during the preceding year was 6,091, thus showing an increase of 2,169 for the present year. The inspector states that no child under 12 years of age is employed in the underground workings of any mine. No serious labor troubles of any kind occurred during the year. At meetings held in the summer and fall of 1903 a scale of prices was agreed upon between the operators and the miners, various details were arranged for, and a working day of eight hours was adopted. A meeting for the purpose of adopting a new scale has recently been held at Pittsburg, Kans., but the result is not known at this time.

The production of coal for the year ended June 30, 1904, was 3,320,057 tons, an increase over the preceding year of 76,355 tons. The average selling price of the coal was $1.923, making the total estimated value of the product $6,375,453, thus showing an increase in value for the year of $1,004,307.

The inspector states that the increased capacity of the mines in the Territory raised the expectation that the production of coal for the present year would show a much larger increase than was actually the case. The output for the first half of the fiscal year was 424,752 tons greater than for the second half. The inspector accounts for the failure of the output to come up to expectations by the falling off of the cotton crop in the Southwest and the resulting smaller demand for steam coal for cotton gins and for railroad purposes; the mild winter in the section of the country supplied with coal by these mines, and the occurrence of violent rains in June, 1904, which flooded several of the mines. The principal cause of the falling off, however, is to be found in the adoption of the eight-hour day, by which the working time of the men was reduced 20 per cent.

Ten new mines were opened during the year, and 6 mines were abandoned. At the end of the year there were 116 mines in active operation.

The production of coke for the year was 50,210 tons, a decrease from the preceding year of 2,415 tons. The inspector finds this decrease somewhat difficult to explain, owing to the excellent coking qualities of the coal produced in the Territory.

The inspector states that the coal fields in the Creek Nation will probably be an important factor in the future production of coal in the Territory. Coal in that nation has heretofore been developed to a small extent on the outcrop in the neighborhood of Dawson and Henryetta; but recently much prospecting has been done on the Henryetta vein, and some shafts have been sunk. This coal crops out east of the St. Louis and San Francisco Railway, with a slight pitch to the southwest, the pitch averaging less than half a degree. The coal at the crop averages 3 feet in thickness, and the roof and bottom, so far as known, are good. The coal is softer than that in the Choctaw Nation and is not so good. The inspector believes, however, that the fields will prove to be extensive, and that the coal can be produced very cheaply.

Appended to the report is a detailed description of the various mines now in operation in the Territory. There are also printed with the report copies of the act of March 3, 1891, for the protection of the lives of miners in the Territories, and the act of July 1, 1902, amendatory thereof, together with decisions of the Department construing the said acts.

NEW MEXICO.—Jo E. Sheridan, the mine inspector, reports that the requirements of the acts of Congress providing for the protection of the lives of miners have been strictly enforced, and that the principal operators have rendered prompt assistance in carrying out the provisions of the law.

The inspector states that the coal-mining industry has been very prosperous during the past year, and the demand during the year continued to exceed the supply, in spite of the increased production, and of the fact that the railroads of the West and Southwest, which are among the largest consumers, have substituted oil from the wells of California and Texas as fuel upon 2,000 miles of railroad. Although the inspector estimates that this substitution of oil for coal as fuel on the railroads, and also in California, lessened the demand for New Mexico coal about 480,000 tons per annum, he does not consider that the prospects of the coal industry of the Territory will be affected by the temporary falling off in the demand which resulted from such change. In the first place, the flow of oil in the wells of both the California and the Texas fields has diminished to such an extent that the price per barrel has increased from 100 to 200 per cent, thus allowing successful competition with oil by New Mexican coal. Then the rapid settlement of Arizona, New Mexico, and the surrounding country, and the development of the resources of this section, will furnish a perma-

nent and constantly growing market for this coal. The inspector also believes that the construction of the Panama Canal will furnish a large and profitable market for the output of these mines, as the large number of vessels which will doubtless use the harbors of California in connection with this traffic will find their nearest available coal supply at these mines.

The net production of coal during the year was 1,594,584 tons, thus showing an increase of 267,781 tons, or 20.18 per cent, over the production of the preceding year. The estimated value at the mines of the net product during the year was $2,185,779.47, an increase over the preceding year of $390,571.47.

Three new mines were opened during the year, and several new prospect shafts were opened which only need development to become good producers. No mines were abandoned.

The inspector estimates the area of the New Mexican coal fields at 1,493,480 acres, and the total available tonnage at 8,813,840,000. The thickness of the coal seams runs from 40 inches to 6 feet.

The coal fields of the Territory are attracting more attention than ever before, and plans are being made for the investment of considerable capital in their development. A company has been incorporated for the purpose of building a railroad to connect the coal fields of San Juan County with the mines, smelters, and railroads of Arizona and Mexico, and when this done there will be a considerable increase in the demand for the coal mined in this section.

There were 1,888 men and 84 boys employed at the mines during the year, as against 2,232 men and 109 boys employed during the preceding year, a decrease of 15.8 per cent in the number of men, and of 22.9 per cent in the number of boys. The increased production with a smaller number of employees was due to the fact that in the preceding year many men were employed in development work in the mines; the production from such development or "narrow" work, as it is called, being small compared with the production obtained by work in rooms, for which the development work prepares the mine.

There were comparatively few labor troubles during the year in the mines of the Territory. A strike was called in district No. 15, and the resulting suspension of operations at some of the mines in the northern part of the Territory lessened the production some 75,000 tons. No lawlessness occurred in connection with the strike, however, and the mines were soon operating with their usual force of men and with a normal output.

The inspector reports that he has maintained a close and constant supervision of all coal mines in continuous operation within the Territory. The air entering and traveling through the mines has been carefully measured and followed to the several working faces to see that it was properly distributed and traveling with sufficient velocity

and volume. Old gobs which might give vent to noxious gases have been carefully examined, and, where necessary, stoppings built to cut off connection with the portions of the mine in active operation. Particular care and attention has been given to try to obviate the dangers from explosions due to coal dust, and appropriate instructions were frequently issued to the mine officials.

Safety lamps in use at gaseous mines were carefully examined, and all machinery, cars, cables, etc., regularly inspected. Inquiry was made as to the habits of miners and other employees in and about the mines, and every care taken to see that they might not be injured by their own negligence or the carelessness of fellow-employees. The report of the inspector contains a detailed statement of all inspections made by him, and of the various suggestions and orders which he found it necessary to make.

There were 101 accidents reported to the inspector during the year. Fifteen fatal accidents occurred, the causes of which the inspector gives as follows:

By fall of rock	10
Suffocated by smoke in mine fire	3
Struck by flying coal from shot	1
Went back to examine unexploded shot	1
Total	15

This is an average of one life lost for every 109,202 tons of coal mined as against one life for each 79,972 tons mined during the preceding year.

The inspector again calls attention to the necessity of adopting measures to eliminate the probability of coal-dust explosions, which are now of such frequent occurrence in all of the central, southern, and western coal-producing States, as well as in the mines of the Territory. He suggests that the danger is so great that the adoption of effective measures to counteract it is well worthy the attention of the Federal Government. He recommends that a commission of experts in the manufacture of explosives be appointed, for the purpose of experimenting with a view to producing a flameless explosive for use in coal mines—some explosive which would prove safe and convenient in use, and which could be manufactured at reasonable cost. With the same end in view, he recommends that restrictions be placed upon miners in regard to "shooting off the solid," or shooting coal without any preparatory coal cutting or undermining, whereby the force of the explosion is projected in the direction of the mouth of the drill hole, thus frequently producing a blown-out shot, to which cause a majority of the dust explosions can be attributed.

The inspector again directs attention to the desirability of having made a geological survey of the Territory for the purpose of identify-

ing more accurately the coal-bearing areas, and states that such survey would also be of great utility to the operators in metalliferous mining.

He also renews his recommendation that section 10 of the act of March 3, 1891, which provides that a metal speaking tube shall be provided in all shafts or slopes, be so amended as to permit the operators at their option to provide telephonic communication instead. In this way, he states, the real purpose of the section will be carried out with more certainty than at present.

In the inspector's report will be found a general description of the New Mexican coal fields, together with a detailed description of the various active mines in the Territory, with a statement of the methods of working the same, the power used, the ventilation, etc. An analysis of the coal produced at various mines in the Territory is also published in the report, as well as other interesting data relative to the mining of coal in New Mexico.

NATIONAL PARKS AND RESERVATIONS.

The Yellowstone National Park.

The Yellowstone National Park, set aside by act of March 1, 1872 (17 Stat. L., 32), is located in the States of Montana and Wyoming and has an area of 2,142,720 acres. The average altitude is about 8,000 feet.

Maj. John Pitcher, Sixth Cavalry, U. S. Army, acting superintendent, reports that the entire boundary line of the park has now been surveyed and the line marked in such a way that it can be easily followed, but it is not so marked that a person who is unfamiliar with the country could not cross it without being aware of the fact. He considers it of the greatest importance that the boundary should be so plainly marked as to render it impossible for anyone to cross it without knowing that he has entered the reservation, and recommends that a wide swath be cut through the forest along the entire boundary line wherever timber exists and that additional monuments be set up wherever the country is open. As it is not practicable to do this work with the troops under his command, he recommends an appropriation of $2,000 for the purpose.

The fence which was constructed for a distance of about 4 miles along the northern border of the park, in the vicinity of Gardiner, has been of great use in keeping all kinds of stock off the reservation, and during the coming winter the antelope will find a supply of winter feed on the hills near Gardiner, such as they have not had for many years.

With a view to improving the appearance of things at the northern entrance to the park near Gardiner, and also to insure an ample supply

of winter feed for the antelope, the entire flat in front of the town of Gardiner has been planted with alfalfa, and the flat which in the past has been a barren and unsightly waste is now a beautiful green field, and presents a pleasing picture to the tourists as they enter the park. The hay, when cut, will be stacked so that it may be fed to the animals when necessary. There has also been planted a line of trees along both sides of the road for a distance of about half a mile from the arch or gateway, and when these have grown to a considerable height they will add much to the attractiveness of this entrance to the park.

The recent opening of the eastern entrance to the park and the establishment of a station near the Sylvan Pass on the eastern boundary, it is stated, make it necessary that a telephone line be constructed connecting that point with the Lake station, a distance of about 28 miles. It is also recommended that a line be constructed connecting Fort Yellowstone with the station at Soda Butte, near the northeastern corner of the park, a distance of 35 miles. At present nearly all telegraphic or telephonic communication is had through the wires of the Yellowstone Park Association, and it is said that it would be much better if the Government could own its own line.

During the past summer the United States Fish Commission has constructed a small frame building at the West Thumb of the Yellowstone Lake for the purpose of eyeing the eggs of the black spotted trout. This station has heretofore been in charge of the superintendent of the hatchery at Spearfish, S. Dak., but the acting superintendent suggests that it would be more convenient to place it under the care of the superintendent at Bozeman, Mont. It was the intention to plant a large number of eastern brook and Loch Leven trout in the park during the spring, but owing to a flood at the Spearfish station the superintendent thereof was able to ship only about 21,000 brook trout, which were planted in Willow Creek.

The past winter was an exceedingly favorable one for all game in the park, except the wild herd of buffalo, which number approximately 21. There is danger that this herd, which is located on the head of Pelican Creek, may become extinct in the course of time, and the new herd, it is stated, was started none too soon. The Pelican Creek range is a very unfavorable country for the wild herd to winter in, for in that section the snowfall is very heavy, and the only way they can keep alive is by grazing on the few places kept open by the hot springs. It s believed that it would be dangerous to attempt to drive the herd out of that locality, as many animals would be killed in the attempt. Men are sent out each spring, however, to capture the young calves, which are brought to the post, raised by a domestic cow, and then turned out in the inclosure with the tame herd. Last summer a lot of hay was cut and stacked up in convenient places for these wild buffalo, but

when the scouts went out there in the spring the stacks were so deeply covered with snow that they could not be found. If the herd should abandon the range on Pelican Creek and move down to the lower country, the acting superintendent believes their chances of survival would be greatly improved, and they might become the progenitors of a considerable wild herd.

The increase in the new herd of buffalo during the past season has been very encouraging; it now consists of 39 animals, and they are all in fine condition. Twelve calves were born during the spring, and one calf was captured from the wild herd in the park. Including the herd of 21 wild buffalo there are now approximately 60 buffalo or bison in the reservation.

The herd of antelope which winters near the town of Gardiner is doing exceedingly well and seems to be increasing in numbers. About 1,150 were seen and counted last winter. The new alfalfa field will be a great boon to these animals.

The blacktail or mule deer are also undoubtedly increasing in numbers and are becoming more tame and fearless each year. One hundred and twenty were counted on the parade ground one day last winter.

The band of mountain sheep which winters on Mount Evarts was fed quite liberally the spring of 1903, and therefore passed through the winter in good shape. A new band of about 100 was seen last winter near the northwestern corner of the park, and it is hoped that they have taken up their permanent residence within the limits of the park.

The bears in the park can always be seen about the various hotels, where they are a source of much amusement to the tourists. There are, on a rough estimate, about 150 bears in the park, of which about 50 are grizzly, 60 black, and 40 brown.

With the increase of horned game in the park, a corresponding increase has taken place in the carnivora. Mountain lions or panthers, formerly not abundant, are now quite common, though rarely seen. They prey chiefly, perhaps, upon the elk, but are destructive also to deer and mountain sheep. A pack of hounds has been procured, which last winter enabled the game warden and scouts to kill 15 of these animals.

The coyotes, while much more numerous than the lions, are not nearly so destructive. During the long winter months they act as scavengers for the lions, and prey upon the carcasses of animals killed by the latter. In summer they delight in watching the mother deer, elk, antelope, or mountain sheep until she calls her little ones out from hiding to feed, when they quickly devour the young one. It requires much skill and labor to exterminate these animals without destroying others, such as fox and marten, of which there is a considerable

number in the park. The foxes are mostly red, but there are a good many cross-breeds, and occasionally a silver-gray or black fox will be seen.

The advisability has been discussed very fully in previous reports of extending the boundaries of the Yellowstone National Park so as to include portions of the forests reservations on the east and south of the park, as the best means of affording protection to the large game therein, particularly during the winter season. The importance of this subject is such that I deem it my duty to again direct attention to the matter, and to urge the early enactment by Congress of the necessary legislation. The steps heretofore taken looking to legislative action in the matter are fully set forth in the reports of the Secretary of the Interior for the years 1898, 1899, 1900, 1901, and 1902, wherein, among other things, it is stated:

Under date of February 1, 1898, there was transmitted to Congress a report made on the 12th of January, 1898, by Col. S. B. M. Young, Third U. S. Cavalry, then acting superintendent of the park, recommending the extension of the limits of the park, and submitting a draft of a bill with a view to carrying the same into effect.

The boundaries as suggested in said bill, which are indicated on a map accompanying the same, would extend the limits of the park so as to embrace the Yellowstone Timberland Reserve, which lies on the east and south boundaries of the park, and comprises about 1,914 square miles; all that portion of the Teton Forest Reserve lying east of the summit of the Teton Range and comprising about 1,050 square miles, and adjoining the Yellowstone Timberland Reserve on the south, together with an unreserved area of about 30 square miles at the southwest corner of the park, in Idaho, and an unreserved area of about 260 square miles at the northwest corner, in Montana.

In the forest reserves are fine bodies of timber which it is important should be preserved from fires because of its value as timber, as well as the protection to watersheds and against fires running into the park.

It is reported that during the winter months the large game from the National Park herd roam to a very considerable extent in the areas proposed to be included within the park, and they should have all protection possible from destruction by marauders, who are constantly on the watch for game as it roams out of the park limits. The State game laws are applicable to the forest reserves, and for this reason it is impracticable to prevent the killing of game in the reserves in the same manner and to the same extent as it is prohibited in the park. The superior discipline of regular troops makes a more effective patrol than the civil forest officers, and cavalry can cover a greater extent of territory with more expedition and is better able to cope with trespassers than are forest rangers.

In view of the importance of protecting this country, which has an international reputation on account of its scenic beauties, and to throw additional safeguards about the big game whose natural home is in the National Park, and to protect more effectually the timber embraced in the forest reserves adjoining the park, I think it a wise policy that the additional areas herein described be embraced in and placed under the laws and management relating to the Yellowstone National Park.

On March 18, 1902, I transmitted to Congress (H. R. Doc. 500, 57th Cong., 1st Sess.) papers tending to show that the large game—moose, elk, deer, antelope, mountain sheep, etc.,—which have their summer range within the Yellowstone National Park, drift out of that reserva-

tion in the fall, seeking a winter range for food, into the forest reservations abutting the park on the south and east, and that while in that country the animals are ruthlessly killed in large numbers by pot hunters and others for their heads, teeth, pelts, and meat, and transmitted a form of bill providing for the extension of the limits of the Yellowstone National Park, so as to include the above-mentioned forest reservations.

The Yellowstone Park Transportation Company, bringing tourists from the northern entrance of the park, has further increased its plant as to coaches and horses, and the service rendered has been very satisfactory. The Monida and Yellowstone Stage Company, bringing tourists from the western entrance to the reservation, has also improved its equipment, and has rendered satisfactory service.

The services rendered by W. W. Wylie, who is licensed to conduct camping parties through the park and to maintain permanent camps, have been entirely satisfactory to his patrons.

The Yellowstone Park Association, which under contract maintains the hotels in the park, has greatly improved its accommodations. The new hotel at the Upper Geyser Basin, known as "Old Faithful Inn," is a handsome and comfortable establishment. The hotel at the lake outlet has been rebuilt and is now the largest hotel in the park.

The total number of visitors to the park during the season was 13,727. The aggregate number carried over the regular route by the Yellowstone Park Transportation Company was 6,044; by the Monida and Yellowstone Stage Company, 2,241; others at hotels, 203; carried by W. W. Wylie and accommodated at his camps, 1,285; camping parties carried by other licensees, 441; camping parties carried by private transportation, 3,513.

During the season 3,826 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number, 2,141 entered the park with the Yellowstone Park Transportation Company, 476 with the Monida and Yellowstone Stage Company, 1,092 with W. W. Wylie, and the balance, 117 people, were campers.

The acting superintendent strongly recommends that the post of Fort Yellowstone should be enlarged. He states that he would urge that the garrison be increased to a four-troop post but for the fact that there would be no quarters for their accommodation. The post is seen by many distinguished visitors from all over the world, and for this reason, if for no other, it should be a model post in every way. He states that if the post could be increased in size as suggested, it would not only be beneficial to the interests of the park, but to the interests of the service as well. He suggests that it would then be practicable to carry on considerable military instruction in and about the post, which would be of benefit to the men, and also give the many visitors an idea of what is being done in the Army in the way of drill

and instruction. During the greater part of last summer the garrison was so much reduced by the necessary detached service that it was not practicable to keep the post properly policed.

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During the tourist season of 1904 licenses were granted to 11 persons to conduct camping parties through the park, the total number of wagons used for the purpose being 38, and the amount of license fees paid, at $5 per wagon, being $190.

Estimates for the park for the ensuing fiscal year have been submitted to Congress for appropriations, as follows:

For the administration and protection of the Yellowstone National Park, construction of building for registration purposes, construction of 75 miles of telephone line, for marking surveyed boundary lines of park, and for forage for game, $16,180.

For purchase of additional buffalo, fences for summer pasture therefor, purchase of necessary feed for buffalo, and salaries of game warden and assistant, all to be expended under the supervision of the Secretary of the Interior, $16,700.

Yosemite National Park.

This park is situated in Tuolumne, Mariposa, and Mono counties, Cal., and covers an area of about 1,512 square miles, being 36 miles wide and about 42 miles long. The lands embraced therein were set aside by act of Congress approved October 1, 1890 (26 Stat. L., 650), and were placed under the supervision of the Secretary of the Interior.

Maj. John Bigelow, jr., Ninth Cavalry, U. S. Army, was designated as acting superintendent, and entered upon the discharge of his duties on May 23, 1904, having under his command Troops C and D, Ninth Cavalry. From the close of the season of 1903, until the arrival of Major Bigelow, the reservation was in charge of Forest Rangers Britten, Leidig, and Leonard. On account of his retirement from active service, Major Bigelow was relieved from duty as acting superintendent of the park to take effect September 15, 1904, and Capt. W. H. McCornack, Ninth Cavalry, U. S. Army, was thereupon designated as acting superintendent, and served as such until the troops were withdrawn from the park on October 15, 1904.

The main camp was established on the site used for this purpose during preceding seasons, situated about one mile west of Wawona, on the southern edge of the park. While for some purposes a more central position in the park would have been preferable, this was found to afford the best means of communication with the patrol posts on the one side and Raymond, the shipping point, on the other. Subsequently, eight patrol posts were established, each consisting of an officer or noncommissioned officer, and a detachment of enlisted men. These posts were located at Crockers Station, Hog Ranch, Return Canyon, Soda

Spring, Reds Meadow, Little Jackass, Chiquita Lake, and Jerseydale. The patrol posts were divided into two sections, each commanded by an officer. The commander of the eastern section was located at Soda Spring, and the commander of the western section at Camp A. E. Wood. The troops or "reservation guards" at the several posts were directed to patrol the intervals between patrol posts, and on every Thursday at noon the patrols of adjoining patrol posts met and exchanged mail and messages. A complete circuit of patrols in the park was thus established.

Standing orders for the government of the "reservation guards" were issued, giving detailed instructions for making patrols and reconnaissances, preventing trespassing by sheep, cattle, and other live stock, extinguishing forest fires, preventing the unlawful killing of game or other depredations by tourists and camping parties, as well as by persons living upon patented lands within the park, and examining and sealing firearms. These orders were not issued until the season was somewhat advanced, and so were not subjected to the test of a whole season's trial, but in most respects they were found to work satisfactorily and the superintendent believes that they may prove of some assistance to the troops detailed to the park at the beginning of next season, especially if these should be without experience as reservation guards.

Persons entering the park were required to give up their firearms, or when they desired to leave the reservation by another road the arms were sealed and delivered to the owners with a permit to carry the sealed weapons through the park. The report shows that 200 arms were sealed, and 18 taken up, during the season. Seventeen permits to carry arms were issued. Among the troops noncommissioned officers were allowed to carry carbines and revolvers, while privates were armed only with revolvers. No complaint was made during the season relative to the killing or catching of game by the troops. Particular orders were issued to the troops not to injure any tree or mark or deface any natural object.

Only two considerable forest fires occurred in the park during the season, both being in timber lands. The first fire broke out on June 30, 1904, in the vicinity of Pinoche Peak, and was extinguished on July 6, about 2 square miles having been burned. One officer and 25 men fought this fire, although there was not at the time an adequate supply of fire-fighting implements on hand.

The second fire broke out on August 13, in the vicinity of the south side of the Middle Fork of the Tuolumne River. From the 13th to the 17th this fire was fought by the patrol posts at Hog Ranch and Crocker's Station, with the assistance of half a dozen citizens. On the 17th a detachment of 25 men and 1 officer from the camp arrived on the scene, and the fire was then got under control. It was finally extinguished on the 23d, the burned area being about 3½ miles. A

few minor fires also occurred, which were promptly extinguished. An adequate supply of fire-fighting implements was purchased during the season.

The acting superintendent suggests, as a means of preventing devastating forest fires, the regular and systematical burning of the underbrush, dead leaves, and other débris of the forest. While such preventive firing would, of course, be attended with some danger, he expresses the opinion that it would be less destructive than the accidental and incendiary fires now of frequent occurrence. He recommends that the question be submitted to a commission of experts in forestry for determination.

As usual, considerable difficulty was found in dealing with trespassing live stock—cattle and sheep—the number of trespassing sheep found during the season having been very large. The acting superintendent reports that, in accordance with Department instructions, he conferred during the year with Forest Supervisor Charles H. Shinn, of the Sierra Forest Reserve, with the result that cooperation was secured between the troops in the park and the rangers in the Forest Reservation in dealing with trespassing sheep and cattle owners. The number of cattle, horses, etc., found trespassing by the reservation guards was in excess of 164, while the number of trespassing sheep found by the patrols exceeded 50,000. Even with this enormous total, however, the acting superintendent expresses the belief that the number of sheep ejected from the park during the season was equaled by the number which were trespassing but evaded discovery. Upon this point he concurs in the recommendation of Lieutenant-Colonel Garrard, the acting superintendent for the previous year, expressed in the following language:

> Every acting superintendent of the park has felt the necessity for and recommended the enactment of laws prescribing penalties for violations of the rules and regulations. In our country, where no man can be deprived of life, liberty, or property, without due process of law, it is plainly impossible for an officer to properly punish anyone for breaking the rules and regulations that have not the sanction of law. Even when the laws are ignored there is no way provided for bringing offenders to trial, there being, I believe, no United States commissioner or district court within 100 miles. I strongly recommend that the park be made a United States court district, and a resident commissioner appointed. The rangers could easily serve as deputy marshals without interfering with their other duties.

During the latter part of the season it was found advisable to employ more stringent measures in dealing with the owners and herders of trespassing sheep, particularly as most of these persons appeared to be old and willful offenders. Accordingly, under Department instructions, the following order was issued on September 9, 1904:

> When sheep are caught trespassing on the reservation, and are accompanied by herders, the sheep will be expelled in one direction, the herders in another, and their outfits in another. Sheep driven into a forest reserve must be driven out of it.

Ordinarily the sheep will be driven out of the park on its east side, and the herders and outfits, if practicable, on the northern and southern sides.

The strict enforcement of this order had a beneficial effect, and a similar one will be issued early in the season next year.

The acting superintendent urges the necessity of a careful and thorough consideration of the following measures, some of which are now pending in Congress: First, the acquisition by the United States of the Yosemite Valley Grant, now owned by the State of California; second, the purchase by the Government of the toll roads in the park leading to the valley; third, the acquisition by the Government of certain patented lands scattered through the park, aggregating perhaps 100 square miles in extent; fourth, the withdrawal of eight townships from the Yosemite National Park.

Regarding the acquisition of the Yosemite Valley grant, it is stated that the valley would be rendered more attractive and would be better policed if placed under the supervision of the National Government, and it is said that the idea that the United States should own the valley, as well as the park surrounding it, is gradually gaining favor with the people of the State, the anomaly of divided ownership and divided responsibility being self-evident.

The existence of private toll roads within the park is said to be very objectionable. Some of the roads are in bad condition, the corporations owning and operating them making only enough repairs to prevent forfeiture of their charters. A number of instances of vandalism occurred along the lines of these toll roads during the season, such as the cutting and "girdling" of trees, painting of objectionable advertisements, etc. Some of this could not be prevented, owing to the fact that the acts were committed within the right of way of the toll road.

The purchase by the Government of the patented lands within the park, it is stated, would greatly simplify the work of administration in the reservation. The men patrolling the park are frequently in doubt as to whether they are on Government or private land, and vigorous action is not to be expected from them under these circumstances. Moreover, the private ownership of lands within the park causes considerable injury to the park itself on account of the felling of trees, the starting of forest fires, the depredations of live stock, sheep, etc., and the killing of game by persons living on the patented lands. The acting superintendent states that the essential purposes of the park, considered as a tract of reserved forest land, are as follows:

First. To afford protection for a certain rainfall, and so preserve the water supply of an extensive region.

Second. To provide a great museum of nature for the general public free of cost. This was doubtless the object had in mind when the name "park" was given.

Both these objects would be better subserved if the Government should acquire all the patented lands situated within the park.

In discussing what is known as the "Gillette bill," now pending in Congress, for withdrawing certain lands from the park, the acting superintendent repeats the language of his predecessor, Lieutenant-Colonel Garrard: "I do not recommend the cutting off of one acre of the park." Most of the area proposed to be eliminated lies in the western part. In the southwestern corner of the park (owing to the comparative warmth of this section) is the principal retreat of deer and small game in the winter. The opening of this country to hunters, it is stated, would accelerate the lamentable destruction of game now going on in the reservation. In the northwestern section is the Hetch Hetchy Valley, thought by some people to equal the Yosemite in scenic beauty and interest. The cutting off of the adjoining sections of land would render this valley more difficult to police; and perhaps the next step would be to take it, also, out of the park.

By the act of Congress approved February 15, 1901 (31 Stat. L., 790), the Secretary of the Interior is authorized and empowered to grant rights of way in the national parks and reservations for telephone and telegraph purposes, and for water conduits, reservoirs for irrigation, mining or quarrying, manufacturing, or other purposes. No applications for privileges in Yosemite National Park under this statute were presented during the year. The policy of the Department regarding cases arising in these parks, as stated in my last annual report (p. 157), is to refuse the application in all cases where, in my judgment, the facts did not warrant a finding, as required by the act, "that the same is not incompatible with the public interest," and also where the proposed enterprise necessarily involved the appropriation of private property in the park (the owner or owners not having consented thereto), or the violation of the act of October 1, 1890 (26 Stat. L., 650), creating the park, especially the provision which directs the Secretary of the Interior to make regulations "for the retention in their natural condition of all * * * natural curiosities or wonders within said reservation."

The principal improvements authorized during the year from the appropriation of $5,400 for protection and improvement of the Park were repairing trail from Rodgers Lake to Smoky Jack Meadow, about 30 miles; constructing trail from Lamberts Soda Spring to Palmer trail, 5 miles; repairing parts of trail from Hog Ranch to Hetch Hetchy Valley; constructing trail from Hopkins place to Merced Lake, about 8 miles; repairing trail from Crescent Lake to Johnson Lake, 1 mile; repairing trail from Chilnualna Falls to junction with trail from target range, 5 miles; repairing suspension bridges over Merced River and Wet Gulch; constructing a foot bridge over the South Fork of the Merced River near Camp A. E. Wood;

constructing a corral for impounding cattle at Camp A. E. Wood; construction of an office building, with furniture and office fixtures therefor; purchase of guide posts and labels, etc.

Most of these improvements were completed during the season, but on account of the snowstorms which come early in the fall in this region, it was necessary to postpone the final completion of the corral and one or two of the trails until next spring. The office building has been found to be a great convenience and will permit the storage of the various files and records in the park during the winter months.

The projected road from Glacier Point to Mono Meadow was constructed by the labor of troops, without expense to the Government. A corral was also constructed by the labor of troops at Big Oak Flat, on the South Fork of the Merced River, to be used as a pound for trespassing cattle.

With the aid of military transportation some 95,000 trout from the State fish hatchery in the park were planted in July, and it is said that the streams and lakes in the park are generally well stocked with trout.

During the season the acting superintendent established in the park an arboretum and botanical garden, under the name of "The Arboretum." Some improvements were made by putting up signposts and seats, trimming trees, and removal of dead wood and other débris. First Lieut. Henry F. Pipes, of the Army Medical Corps, acted as officer in charge. The arboretum is situated near Camp A. E. Wood, on the South Fork of the Merced River, adjoining the Wawona Hotel. Its area as at present laid out is about 100 acres. The land selected is generally wooded, and has a fair slope toward the river. Running through the grounds is a creek known as "Big Creek." So far, only a fair beginning has been accomplished with the arboretum, but it is hoped in time to make it one of the most interesting features of the park, and to have in it, properly placed and labeled, an example of every plant to be found within the limits of the park. It is to be remembered that some of the rarest and most interesting specimens of North American flora obtainable are to be found in the vicinity of the park.

The acting superintendent recommends that in future the troops detailed to the park should arrive not later than the 1st of May. He states that, if practicable, part of a troop of cavalry should be stationed at Bridgeport and another detachment at Sonora to watch the bands of sheep as they come up from the south with a view to trespassing in the eastern and northern sections of the reservation. The troops could then follow the sheep into the park, if they did not intercept them on the border. During the past season, although detachments went out from camp before the snow had sufficiently melted in the mountains to admit of their crossing the ridge, the troops found when they got

across it that sheep had been trespassing in the park on the north side of the mountains for weeks.

It is also recommended that the officer to be detailed for service in the park next season be sent there, with one enlisted man as clerk, about a month before the troops arrive. This will enable him to examine the records, maps, reports, etc., converse with the rangers, travel over accessible parts of the park, and get in touch with his work before the troops arrive. It is believed that this recommendation is an important one; and until it becomes practicable to secure the assignment of an officer as acting superintendent to continue on duty for several years, and the establishment of permanent quarters for troops within the park, so that they may remain in the reservation throughout the year, as has been heretofore recommended, the Department will endeavor to secure the cooperation of the War Department in having the officer detailed as acting superintendent sent to the park early in the spring of each year.

CHANGING THE BOUNDARIES OF THE PARK.—At the last session of Congress H. R. bill 9310, to exclude certain lands therein described from the Yosemite National Park, was introduced and referred to this Department for report. After careful investigation of the matter, under date of April 13, 1904, an adverse report was made upon said bill, and in lieu thereof a substitute was suggested, copy of which is hereto appended page 320, Exhibit L. Subsequently the House Committee on Public Lands, after consideration of Department letter of April 13, above mentioned, reported H. R. bill 15191, hereto appended pages 321–323, Exhibit M, as a substitute for H. R. bill 9310. This substitute bill was still pending and undisposed of. And to the fact, in all likelihood, that Congress desired further practical information in regard to the character of the lands proposed to be excluded from the park before finally acting upon said bill, was due the enactment of the legislation embraced in the sundry civil act approved April 28, 1904, appropriating $3,000, to be immediately available, for the purpose of causing an examination to be made of certain lands in the Yosemite National Park and the selection of a site for a substantial road to be built within the reservation. The paragraph referred to is in terms as follows:

> The Secretary of the Interior is hereby directed to examine into the conditions and situations in the United States Yosemite Park in the State of California for the purpose of ascertaining what portions of said park are not necessary for park purposes but can be returned to the public domain, and also at what place a good and substantial road can be built from the boundary of said park to the Yosemite Valley grant, including the length and cost of the same; and for the purposes of said examination the sum of three thousand dollars is hereby appropriated, to be immediately available.

Believing that the provisions of the statute could be better effectuated by having a personal examination made of the park lands by

competent persons, I accordingly, under date of June 14, 1904, commissioned Maj. Hiram M. Chittenden, Corps of Engineers U. S. Army; Mr. Robert B. Marshall, topographer of the Geological Survey, on duty in California, and Mr. Frank Bond, chief of the drafting division of the General Land Office, as members of a commission to examine into the conditions and situation in the United States Yosemite Park in the State of California. On the 24th of June, 1904, the commission reached the Yosemite Park, at once effected an organization, and entered actively upon the execution of the work intrusted to them.

The very full and comprehensive report of this commission, dated August 31, 1904, embodying the results of their work in the field and their conclusions upon the various subjects presented in connection with the investigation, will be transmitted to Congress for its consideration immediately upon the convening thereof. The recommendations of this commission may be briefly summarized under the following general heads:

READJUSTMENT OF BOUNDARIES.—The natural desire of private owners of lands and improvements within the park to develop and exploit their properties has made administration of park affairs by the Government difficult and unsatisfactory. For the purpose of removing this condition, three plans were considered by the commission. First, the exclusion of all private holdings; second, the purchase of all private holdings; and, third, the exclusion of some and the purchase of the remainder. The first and second plans were rejected because they involved, respectively, the destruction of the integrity of the park and a prohibitive cost.

The commission recommends the exclusion of all private claims that may be spared without serious detriment to the park and the purchase of the remainder. The location and character of the patented lands are indicated upon a map accompanying the report. Said map also shows the proposed new boundaries, which exclude 542.88 square miles of the present park and add 113.62 square miles, making an actual reduction in area of 429.26 square miles. These boundaries exclude about 40,000 acres of private holdings, mostly timber land, and retain about 22,347 acres, also chiefly timber. They also exclude the mineral lands within the park. They include the valuable water resources, but contain nothing that should jeopardize the integrity or mar the natural beauty of the reservation in the future. They follow surveyed lines on the west side, because of the private claims, but on the north, east, and south follow natural lines—either divides between great watersheds or the channels of large streams. It is recommended that the new boundaries be surveyed and properly marked.

PRIVATE LANDS.—The patented lands within the park, embracing about 60,000 acres, are located chiefly between the Merced and Tuo-

lumne rivers, and are mostly timber claims. The largest body surrounds the Merced and Tuolumne groves of Sequoia, which are on public land. These timber lands were sold at $2.50 per acre, but the original price has been increased by taxes and other expenses to about $10 per acre. They are being purchased and consolidated in one ownership, at prices ranging between $12 and $18 per acre, but it is probable that about $30 per acre would be necessary to buy or condemn them. The values of the 22,347 acres remaining within the boundaries herein recommended vary greatly. The Commission recommends exchange and purchase to extinguish all private titles thereto, condemnation proceedings to be resorted to where necessary, and an appropriation of $100,000 with which to begin the work.

ROUTE FOR PROPOSED GOVERNMENT WAGON ROAD.—But one approach or route to the valley is recommended. This is up the Merced River, is of an even and easy grade, with no mountains to cross, and rises from an altitude of 1,350 feet to 3,500 feet in the 20 miles of its course. It is a practicable all-winter route and may be sprinkled cheaply. No other routes can compare with this, except in the one item of cost of construction. All existing roads have heavy grades, rising and falling 2,000 to 3,000 feet; scarcity of water makes sprinkling impossible, and all are unnecessarily long and blocked by snow the greater part of every winter. Being entirely of earth construction, the dust upon these roads renders the discomforts of ordinary stage travel extreme. The recommendations made by the commission in regard to the Merced River route are contingent upon the action taken by Congress in the matter of change of boundaries.

Assuming the new boundaries will be adopted, the commission recommends the construction of a macadamized highway, 20 feet wide, from the new western boundary to the Yosemite Valley grant, a distance of 6.65 miles, at an estimated cost of $20,000 per mile, or $138,000 in all, and the construction of a wagon road 12 feet wide from the end of the macadamized highway to the present western boundary, a distance of about 14 miles. The total cost of the dirt wagon road is estimated at $43,000. These roads are on the north or right bank of the Merced River. The authorization of an electric road from the new boundary and terminus of the macadamized highway to the present western boundary of the park, chiefly along the south or left bank of the Merced River, is also recommended. Plan and profile, with estimate of engineer for construction of roads, are submitted with and form a part of the report.

In connection with the selection of a route for a wagon road across the National Park to the Yosemite Valley grant, the commission recommends a comprehensive road system within the park, which, it is stated, is greatly needed in order that objects of interest may be reached. An outline for same is shown upon the map.

PATROL SYSTEM.—Under present conditions, the patrol system can not be made satisfactory. The headquarters should be centrally located, and, with patrol stations at all points where roads cross the park boundary, should be made permanent and be continuously occupied. All stations should be connected with the central post by telephone. An arrangement for an effective patrol system is indicated upon the map filed. The present inefficiency is due to inability of troops to familiarize themselves with their duties and the country to be patrolled. A longer detail for this work is recommended.

TOLL ROAD CONDITIONS.—There are four toll roads within the Yosemite National Park, three of which have toll gates and charge toll regularly. Of these three, two enter the National Park from the west and one from the south, at Wawona, and all continue to the Valley Grant, the Wawona road having also a branch line from Chinquapin to Glacier Point. The fourth toll road crosses the National Park from west to east, but does not enter the Yosemite Valley Grant.

Table of toll-road data.

Name of road.	Total length.	Length within park.	Cost of construction.	Cost per mile.	Value given by the commission of 1899.	Elevation reached.	Toll collected.	Franchise expires.
	Miles.	*Miles.*				*Feet.*		
Big Oak Flat	30	19	$40,000	$1,000	$30,000	7,250	[a] $36,000	Jan. 20, 1901.
Coulterville	34	24	85,000	1,500	50,000	6,050	[b] 34,000	About 1920.
Wawona	60	19	77,000	1,680	70,750	6,390	[c] 220,000	Nov. 16, 1921.
Tioga	56	51	62,000	1,000	58,000	9,941	(*d*)	Jan. 8, 1934.

[a] Estimated. [b] Including 1899. [c] Incomplete. [d] Collected 2 years only.

The commission emphatically dissents from the view taken by the representatives of the toll roads, that the Government should buy these roads before constructing a free road, either at the price named by the owners or a price based upon original cost or earning value. A price based upon present actual cost of construction for such portions of the toll roads as can be utilized in a well considered road system for the park is deserving of careful consideration, but thorough preliminary surveys should first be made in all cases. If any price is paid for those portions of the toll roads within the park which will be of no use to the Government, it should be nominal and for the purpose of quieting title only. It is probable that 3 or 4 miles of the Big Oak Flat road could be utilized by the Government, none of the Coulterville road, and 19 miles of the Wawona road for patrol purposes, if obtained at actual cost of making an equally good road. A better road might possibly be built to Wawona from Glacier Point, via Bridal Veil meadows and Chilnualna Falls. Of the Tioga road, the Government might use certain portions to advantage, but it is not worth more than the cost of repair.

The following estimates of appropriations for this reservation for the ensuing fiscal year have been submitted to Congress, through the honorable Secretary of the Treasury, as required by law:

For the construction of a road from the western boundary of the Yosemite National Park, through the reservation, to the western boundary of the Yosemite Valley Grant, the latter reservation being within the metes and bounds of the Yosemite National Park, $181,000.

For the extinguishment of private holdings within Yosemite National Park, in accordance with the recommendations embodied in the report, dated August 31, 1904, of the Commission appointed pursuant to act of Congress approved April 28, 1904, to investigate conditions and situations in the Yosemite National Park, Cal., $100,000.

For the improvement of the Yosemite National Park, management, protection, and construction of bridges, fences, and trails, and improvement of roads, other than toll roads, to be expended under the direction of the Secretary of the Interior, to be immediately available, $8,000.

Sequoia and General Grant National Parks.

Sequoia Park is located in Tulare County, Cal., and has an area of about 250 square miles. It was set aside by act of Congress approved September 25, 1890 (26 Stat. L., 478), and placed under the control of the Secretary of the Interior.

Capt. George F. Hamilton, Ninth Cavalry, U. S. Army, detailed May 11, 1904, to command the troops in these parks and designated acting superintendent, reports that with Troops A and B, Ninth Cavalry, he arrived at Three Rivers, Cal., on May 26, 1904. Instructions from the Department were awaiting him at the post-office, and the forest rangers in the resevations at once reported for duty. On June 4 the command started for Sequoia Park, and on June 5 established a permanent headquarters camp at Sequoia Creek, near the Giant Forest. The troops remained in the parks until October 15, when, by an order received from the Department of California, they were relieved from duty.

Commencing June 2 outposts were established and detachments sent to the following stations: Cloughs Cave, Atwell's Mill, Mineral King road at Cold Spring, Old Colony Mill road at Cedar Creek, Hocketts Meadow, Alta Meadow, northern boundary at Clover Creek, northern boundary at Stonycreek, most northerly crossing of Tar Gap trail and eastern boundary, and on August 9 the detachment at Hocketts Meadow was moved to Quinns Horse Camp. A small detachment was maintained at Threerivers all summer to guard the supplies kept there. The distribution of these detachments covered all the usually traveled routes to and from the park; each detachment remained at its outpost fifteen days, patrolling as much of the park in the vicinity of

its station as practicable. The troops alternated in furnishing men for each detachment. Typewritten instructions in regard to the duties to be performed, accompanied by a map, were furnished each outpost.

To prevent any claim being made that the soldiers on duty were killing game in the park, their carbines were boxed up and kept so while troops were in the reservation. Each soldier, upon going to an outpost, was issued 10 pistol ball cartridges, which he was required to account for upon return to camp.

Permits to drive cattle across the park were issued to parties furnishing the beef for tourists and soldiers. Cattle owners were careful to keep their animals out of the park and no sheep are known to have been within the limits of the reservation.

One forest fire started outside of the park in the vicinity of the improvements being made by the Mount Whitney Power Company, and extended into the reservation; no serious damage, however, resulted. One other fire, caused by lightning, on Homers Nose Mountain, was quickly extinguished by one of the rangers and a soldier; no injury occurred.

Game of all kinds is increasing in the park. Lions and coyotes are numerous and a menace to the game.

Regarding fishing in the reservation, the acting superintendent states:

> There is little good fishing in these parks. The streams of the Sequoia Park should be stocked with trout early in the season, and then fishing should be prohibited within the limits of the park until the young fish have attained a weight of one-fourth pound or over. Horse Creek, in the southern part of the park, has been stocked, and I have prohibited fishing there during this season. Prohibitory notices are posted along the stream.

The Old Colony Mill road has been repaired and widened in the most dangerous places, so far as funds permitted, the object being to make more turn-outs for teams and thus add to the convenience and safety of travel. The road from the park line to the Old Colony Mill should eventually have turn-outs at very frequent intervals. A new trail has been constructed from the saddle northeast of Panther Peak around to Alta Meadows, which cuts out the climb over a portion of Alta Peak, the worst piece of trail in the park. Some work has also been done on a new trail from the Sierra Camp to Panther Peak. The superintendent suggests that a new trail on better grade should be run up the South Fork of the Kaweah River on the south side and a trail opened into the "Black Oak country," in the northwest corner of the park. This region is now quite inaccessible, and if a fire should start there it would be very difficult to put men in to fight it.

The appropriation for repairs to roads and trails should be made immediately available by Congress so that repairs can begin in the spring as soon as the snow melts and work can be commenced. Early

in the season the earth is wet and soft and easily handled, but later it becomes dry and hard and repair work is more difficult and expensive.

A tool house has been constructed at Rocky Gulch, near the lower end of the road, and another one is to be constructed near the upper end of the road in Giant Forest.

The acting superintendent recommends that townships 15, 16, and 17, contiguous on the east and forming a part of the Sierra Forest Reserve, be made a part of the park, as they contain high scenic mountains are a breeding ground for game and much frequented by it in summer. As these townships contain good hunting grounds on the edge of the park, it is likely that hunters will cross into equally good grounds just within the limits of the park.

The superintendent recommends that the Government acquire the patented lands within the park, and also that part of the county road known as the Mineral King road within the limits of the Sequoia Park. He states that satisfactory results can not be obtained in the protection of this park as long as a foot of patented land exists. Questions are continually arising as to the rights of private owners of these lands. A group of about 20 particularly fine Sequoia trees are on patented land in Giant Forest near the Sierra camp which should be acquired without delay.

The acreage of the patented lands in the Sequoia Park is stated to be 3,716.96, having an approximate aggregate value of $70,734, and in the General Grant National Park 160 acres, valued at $1,600. The desirability of the extinguishment of the private holdings in these reservations has heretofore been brought to the attention of Congress in prior annual reports, and I again recommend that early action be taken looking to the acquirement of these patented lands, or that, as recommended in the case of the patented lands in the Yosemite National Park, there be extended to the parks under consideration so much of the act of Congress approved June 4, 1897, as permits the relinquishment by the owners of tracts of land in the several forest reservations and the selection in lieu thereof of vacant lands in other localities which are open to settlement. Appended hereto, page 319, Exhibit K, is a form of bill which, if enacted, would carry into effect my recommendations in the premises.

By the act of Congress approved February 15, 1901 (31 Stat. L., 790), the Secretary of the Interior is authorized and empowered to grant rights of way in these parks for telephone, telegraph purposes, and for water conduits, reservoirs for irrigation, mining or quarrying, manufacturing, or other purposes. One application for privileges in the park under this statute was presented, but was not granted. The policy of the Department regarding cases arising in these parks under the act above mentioned is set forth under the title of Yosemite National Park, page 191 of this report.

In discussing the adminstrative needs of the park, the superintendent states, among other things, that—

I believe the present system of administration and guarding to be entirely wrong and quite unsatisfactory in its workings. The parks should be entirely under civil control, with a permanent superintendent, and six to ten rangers carefully selected, one being a head ranger. Soldiers should not be sent here. The system which I propose would give a more fixed policy of administration, and would secure the continual presence of a superintendent. The parks would be much better and more efficiently patrolled and protected by this ranger force than by soldiers. During the short time that soldiers are on duty here the officers and men can not become familiar with the geography of the park and the location of trails. They are, under the present system, placed in detachments at important points about the park, and patrol from these stations as far and as often as practicable, but can not patrol and investigate nearly so well and efficiently as rangers could. It takes some time for soldiers to become familiar with their duties here. They can not be expected to take the interest in the park and in the enforcement of all the regulations which rangers would take. The soldiers sent here are not, for the time being, available for military duties; they have no drill; they are performing the duties of civil guards. The entire expense of maintaining two troops of cavalry here, including the cost of supplying them, is properly chargeable to the guarding of the parks, and is borne by the War Department, whereas it should be borne by the Department of the Interior.

Some forage and property and supplies to the amount of about 335,100 pounds have been transported from Exeter and Three Rivers to the headquarters camp in the Giant Forest, at an expense of about $2,500. The greater part of the forage was purchased under contract at a still further cost. Upon the withdrawal of the troops all the property and the remaining supplies had to be transported back to Three Rivers, and there will be some property and supplies to be sent back to the presidio of Monterey via Exeter. The contract rate is more than it was last year and is high, being about $1.35 per 100 pounds from Three Rivers to headquarters camp; about $1.75 from Exeter through to headquarters camp. Altogether the present system of guarding the parks entails hard work upon officers and men, great expense to the Government, and is very unsatisfactory in its results.

The rangers' cabins should be connected with each other and with Mineral King and with Three Rivers by telephone. There should also be a telephone in the Giant Forest, preferably at the Sierra Camp. This system would be most convenient and would be of the greatest value as a means of spreading the alarm in case of a forest fire. I am told that the people of this vicinity who have a private line will run their wire to the park line if the Government will put telephones in the park. This private line connects with the Sunset Telephone and Telegraph Company's line, so that extensive telephonic communications would be possible.

General Grant National Park.—This park is situated one half in Tulare County and the other half in Fresno County, Cal., and is about 2 miles square, the attraction therein being two groves of Sequoia trees, one of which contains a very large tree known as the "General Grant."

The wagon roads in the park have been repaired and placed in excellent condition; 1½ miles of new road were completed during the season to the north line of the park to connect with a proposed county road into Kings River Canyon; a quarter of a mile of old road was cleared and widened; 8 acres of land were cleared of logs and under-

brush on both sides of the road leading from the Big Trees to the quarters occupied by the forest ranger on duty in the reservation.

All camping places have been properly patrolled and no fire occurred. During the season there were approximately 1,000 visitors to the park. Game is plentiful. The work of transplanting young Sequoia seedlings has progressed satisfactorily; on a tract of one acre and a half of land there are over 15,000 young seedlings. The most thrifty of these will be transplanted to other places in the park and also in Sequoia Park.

The superintendent recommends that the removal of underbrush be completed as a safeguard against fire, and that a road be constructed to the "Summit," a sightly point within the park.

Estimates for these parks for the ensuing fiscal year have been submitted to Congress for an appropriation of $10,000 for the Sequoia Park and $2,500 for the General Grant Park, to be immediately available and used in the management, protection, and improvement of these reservations.

Mount Rainier National Park.

By act of Congress approved March 2, 1899 (30 Stat. L., 993), certain tracts, pieces, or parcels of land lying and being in the State of Washington, and within the boundaries particularly described as follows, to wit: "Beginning at a point three miles east of the northeast corner of township numbered seventeen north, of range six east, of the Willamette meridian; thence south through the central parts of townships numbered seventeen, sixteen, and fifteen north, of range seven east of the Willamette meridian, eighteen miles, more or less, subject to the proper easterly or westerly offsets, to a point three miles east of the northeast corner of township numbered fourteen north, of range six east of the Willamette meridian; thence east on the township line between townships numbered fourteen and fifteen north, eighteen miles, more or less, to a point three miles west of the northeast corner of township fourteen north, of range ten east of the Willamette meridian; thence northerly, subject to the proper easterly or westerly offsets, eighteen miles, more or less, to a point three miles west of the northeast corner of township numbered seventeen north, of range ten east of the Willamette meridian (but in locating said easterly boundary, wherever the summit of the Cascade Mountains is sharply and well defined, the said line shall follow the said summit, where the said summit line bears west of the easterly line as herein determined); thence westerly along the township line between said townships numbered seventeen and eighteen to the place of beginning, the same being a portion of the lands which were reserved from entry or settlement and set aside as a public reservation by proclamation of the President on the twentieth day of February, in the year of our Lord eighteen hun-

dred and ninety-three, and of the Independence of the United States the one hundred and seventeenth," has been dedicated and set aside as a public park for the benefit and enjoyment of the people of the United States, to be known as the Mount Rainier National Park. The park by said act is placed under the exclusive control of the Secretary of the Interior, who, among other things, is authorized to establish rules and regulations and cause adequate measures to be taken for the preservation of the natural curiosities or wonders within the park, the protection of all timber and mineral deposits from injury or spoliation, the preservation of game and fish, and the removal of unlawful occupants and intruders.

The act setting aside these lands for park purposes differs from the acts of Congress creating other national parks in that it provided, among other things, "that the mineral-land laws of the United States are hereby extended to the land lying within said reservation and said park." It is not believed, however, to be the purpose of this provision to extend the right to use the park lands without restriction, and in the regulations for the government of this park, promulgated August 1, 1903, it is specifically provided that prospectors or miners will not be permitted to injure or destroy or interfere with the retention in their natural condition of any timber, mineral deposits, natural curiosities or wonders within the park *outside the boundaries of* their respective *mining claims* duly located and held under the mining laws.

In previous annual reports, in discussing the status of this national park, attention was directed to the advisability of repealing, for administrative reasons, section 5 of the act of March 2, 1899, above mentioned, as well as the making of appropriations for the protection of the reservation; no legislation, however, on the subject has been enacted by Congress. It has, therefore, been necessary to continue the forest supervisor of the State of Washington as acting superintendent of the park during the past year.

The forest supervisor in charge states that the season of pleasure travel in the park is practically confined to the months of July and August and the first two weeks of September. From November until June the greater part of the reservation is inaccessible on account of the depth of the snow. There is very little travel at any time except along the wagon road in the Nesqually Valley, in the high alpine regions on the south side of Mount Rainier, from the Cowlitz Glacier to Indian Henry's Hunting Ground, and in the northwestern slopes about Spray Park and Crater Lake.

A very small portion of the area included in the park is frequented by tourists. This portion, however, is peculiarly attractive. The mountainous and broken nature of the country, its high altitude, and the absence of trails prevent the other parts from being visited by

tourists. The trail from the wagon road up the Rainier Fork to Indian Henry's Hunting Ground should be repaired and cleared out; this would make a very interesting and beautiful region accessible, but would necessitate a ranger on duty in this place, particularly as it still contains some large game. A trail from Paradise Valley to Reflection Lake would be very much appreciated by the many people who desire to go to that place without a guide.

Nearly all tourists reach the park by the Tacoma and Eastern Railroad, a small local line which extends from Tacoma to Ashford, Wash. To this last point it was completed about July 1, 1904. From Ashford to the west boundary of the forest reserve is about 2 miles. It is 3 miles farther to the boundary of the National Park. A wagon road extends from Ashford up the valley of the Nesqually to Longmire's Springs, in the National Park, and in the summer time a daily stage affords transportation. From Longmire's to Reese's Hotel, in Paradise Valley, passengers and their baggage are transported by saddle and pack animals. Many tourists go as far as Longmire's Springs by private conveyance.

The summer of 1903 was damp, and there were no forest fires in the park from June 30, 1903, to June 30, 1904. August is the month in which fires commonly occur, when there is constant danger of a fire which might in a few hours become beyond control and result in a destruction of timber which would be a great and irreparable loss to the natural attractions of the park, and leave blackened stubs in place of the beautiful groves of alpine fir which are now scattered at intervals through the open parks.

There has been no destruction or mutilation of the green trees.

At least 17 mining claims have been actually located. As several claims have been located near the unsurveyed boundaries of the park, the exact number actually within its limits can not be determined. A number of mineral claims were located in the park, but doubt is expressed as to their actual value. About 73 prospectors have been in the park.

No stock has been transported through the reservation, and no permits have been issued for that purpose. There has been no grazing except where the few head of pack and saddle animals brought in by prospectors and tourists and by one or two milk cattle kept at the hotel in Paradise Valley.

There are several summer boarding houses near the borders of the park in the Nesqually Valley and two hotels in the park itself, one at Longmire's Springs, on patented land, and the other in Paradise Valley, conducted under a permit from the Secretary of the Interior. There is nothing objectionable in the management of these places, and the proprietors are men of excellent character who have rendered material assistance to the forest officers in charge of the park. It is

not believed, however, that the accommodations provided will meet the requirements of the summer of 1905.

There were 563 visitors known to enter the park, and it is probable that the actual number was considerably greater.

Public sentiment very strongly indorses the regulation which prohibits carrying firearms within the limits of the park except by written permit issued by the acting superintendent. This regulation has been thoroughly inforced by the forest rangers without any special difficulty.

During the year ended June 30, 1904, one forest ranger was detailed to the southern part of the park to patrol the Longmire wagon road, Paradise Valley, and Indian Henry's Hunting Ground, while another was assigned to the region about Spray Park and the Carbon Glacier.

Owing to the completion of the Tacoma and Eastern Railroad the travel to the park in the summer of 1904 has greatly exceeded that of previous seasons. It will probably be still greater in the summer of 1905.

The officer in charge of the park states that during the season of summer travel the danger of fire throughout the forest reserve and grazing matters on the eastern slope of the Cascades requires personal attention and he can not at that time properly inspect the park. He further states that, in his judgment, the two rangers now employed, if assisted by another competent man and relieved from duty on the forest reserve, could attend to matters in the field and the general supervision could, under existing conditions, be in charge of the forest supervisor.

The sundry civil act of March 3, 1903, authorizes the Secretary of War to expend the sum of $10,000 for survey and construction of a wagon road into the park. In the sundry civil act of April 28, 1904, provision was made for continuing the road construction in the following terms:

> For continuing the construction of the wagon road into said park heretofore surveyed and commenced under the direction of the Secretary of War, thirty thousand dollars, of which sum six thousand dollars, or so much thereof as may be necessary, shall be used by the Secretary of War in surveying and estimating the cost of a wagon road along the most practicable route from the eastern boundary of the Mount Rainier Forest Reserve into said park.

* * * * * * *

On the 16th of March, 1901, the governor of the State of Washington approved an act of the legislature of the State in relation to Mount Rainier National Park. The act in question is as follows:

> SECTION 1. Exclusive jurisdiction shall be, and the same is hereby, ceded to the United States over and within all the territory which is now or may hereafter be included in that tract of land in the State of Washington set aside for the purposes of a national park and known as Rainier National Park, saving, however, to the said

State the right to serve civil or criminal process within the limits of the aforesaid park in suits or prosecutions for or on account of rights acquired, obligations incurred, or crimes committed in said State but outside of said park, and saving further to the said State the right to tax persons and corporations, their franchises and property, on the lands included in said park: *Provided, however,* That jurisdiction shall not vest until the United States, through the proper officer, notifies the governor of this State that they assume police or military jurisdiction over said park.

No appropriation having been made by Congress for the protection and administration of this park, the notice required by the provision of the above-mentioned act has never been given by the Secretary of the Interior to the governor of the State of Washington.

Estimates for this park for the ensuing fiscal year have been submitted to Congress for an appropriation of $2,600 for the management, protection, and improvement and construction of roads, trails, etc., in this reservation.

Crater Lake National Park.

By the act of Congress approved May 22, 1902 (32 Stat. L., 202), the tract of land bounded north by the parallel 43° 4′ north latitude, south by 42° 48′ north latitude, east by the meridian 122° 16′ west longitude, having an area of 249 square miles in the State of Oregon, and including Crater Lake, has been reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart forevever as a public park or pleasure ground for the benefit of the people of the United States, to be known as Crater Lake National Park.

The act setting aside these lands for park purposes differed from the acts of Congress creating other national parks in that it provided among other things that the reservation should be open "to the location of mining claims and the working of the same." It was not believed, however, to be the purpose of this provision to extend the mining laws to the reservation without limitation, but only to authorize the location and working of mining claims thereon in such manner as not to interfere with or prejudicially affect the general purpose for which the reservation was established. The regulations for the government of the park clearly define the conditions under which this privilege is to be exercised.

The superintendent, W. F. Arant, reports that after the submission of his last annual report on October 14, 1903, he continued to maintain a patrol in the park for the protection of the property and the enforcement of the rules and regulations for the government thereof until November 18, 1903, at which date the snow became so deep that any kind of travel or existence in the reservation was entirely impracticable. Thereafter occasional trips were made to and in the vicinity of the park during the winter months, and up to June 1, 1904, at

which time, the snow being solid enough to walk upon, he made a trip from the south line to the central portion of the park and found the snow in the park at that date to be from 4 to 12 feet deep along the roads and approximately 15 to 18 feet at Crater Lake and on the highlands. By July 6, 1904, the snow having so far receded from the lowlands in the park as to admit of approach to the usual first camping place at Bridge Creek Springs, on the south slope of the mountain, a camp was established at that point and work was commenced on the improvement of the road from the south line of the park, at the head of Anna Creek. This road is now in good repair, and necessary improvements have been made in the road at White Horse, on the route from western Oregon to Crater Lake.

On August 15, 1904, work was commenced on the new road leading to the lake and was continued up to the 22d of September, 1904, when stress of weather necessitated a stoppage. Four miles in all of the new road were constructed, bringing it within 1 mile of Crater Lake. On this road ten bridges were built, ranging from 16 to 104 feet in length, over streams coming down from the springs that rise at the base of Crater Lake Mountain. Should the weather prove favorable in all likelihood the road will be extended to the lake this fall.

Approximately 1,500 tourists, or perhaps more, visited the park during the season. Parties are arriving daily and camping, while others are breaking camp and departing. Lack of funds has prevented the supplying of a register, so that the number of tourists who visited the park during the season is not definitely known.

No applications for permits have been granted for transporting stock over the park lands during the season, and no cattle have been found trespassing except one small herd, which was immediately removed. The season was very dry, and several threatening forest fires were started; they were discovered, however, and extinguished before any damage had been done to the timber or the grass.

The superintendent calls attention to the very limited appropriations made by Congress for the care of the reservation, and the impracticability of making any extended improvements therewith. He states that:

> Referring again to my last annual report of October 14, 1903, and the estimated cost of the necessary improvements for the fiscal year of 1905, and which estimate was in the aggregate $6,695, only $3,000 was appropriated, which amount was entirely inadequate to a good administration of the affairs of the park, and entirely insufficient for making anything like the necessary improvements during one season.
>
> The list of necessary improvements contained only what was really needed for a creditable administration, and the estimated cost was reasonable for the work specified.
>
> Many more improvements than were enumerated in that list and much more money than was estimated could and should be used in the improvement of the park, but the season for work being short in this high altitude, I made estimates for only

what work could be handled to good advantage during the time in which we would have to do it.

The facilities for building first-class roads in these mountains are good; but with an annual appropriation of only $3,000, and after deducting salary of superintendent and allowance for horse, leaving only $1,635 available for improvements, and after the necessary repairs are made in the spring, only a little new construction work can be done.

During this season, after making the necessary repairs on the road from the south line of the park to the head of Anna Creek, at a cost of $300, and at Whitehorse, at a cost of $150, not more than 3 miles of new road can be built, 2 miles of which are now completed, at a cost to this time of $350, and that will require further work to put it in proper condition, and this being the only new improvement made during the year, and notwithstanding a goodly amount of work has been done for the amount of money expended at this rate, a proper development and improvement of the park will be slow indeed.

The altitudes in the camping places in the park, where it is necessary for the superintendent to reside, are from 6,000 to 7,000 feet. The atmosphere, it is stated, is light and cold and storms are frequent, making it unpleasant and not conducive to good health to live in tents, besides occasioning great inconvenience in the office work necessary in the conduct of the affairs of the park. A suitable office building made to withstand the deep snows in the reservation should be provided for the superintendent. Suitable accommodations should also be provided for the horses used by the superintendent in connection with the work in the reservation, as after September 1, it is stated, cold rains and snows are liable to come, and frequently do come, rendering it very uncomfortable and dangerous to horses not properly sheltered.

The superintendent again calls attention to the fact that during the summer months his entire time is taken up in supervising the improvements and other affairs of the park. Dangerous fires frequently break out in the summer time, and there is more or less trespassing in grazing stock on the park lands, as well as on the part of the people in cutting green timber. To fight fires and to enforce the regulations as to grazing and depredations on timber it is absolutely necessary that at least two patrolmen be provided in the park from June 15 to October 15, and these employees can not be provided with the present limited appropriation. Increased estimates for the protection of the reservation during the next year have therefore been submitted.

Although the act establishing the park provides for "the location of mining claims and the working of the same," and the regulations for the government of the park define the conditions under which this privilege may be exercised, no claim is reported as having been filed during the past year.

The superintendent submits estimates of appropriations for the service of the fiscal year ending June 30, 1906, as follows: Residence

with office, $1,200; barn and stable, $400; tool house, $100; fence inclosing buildings, $240; improvement of road from south line to head of Anna Creek, $400; change of road from Whitehorse to new road now being built, $1,500; completion of road now in course of construction, $800; improvement of swampy road at Whitehorse, $250; improvement of trail inside of crater, $500; iron railing on Victor rock, $150; register and supplies and house for same, $150; lumber and transportation for same, $208; spikes, bolts, and other hardware for bridges, $75; purchase of tools, $100; salaries, superintendent and two patrolmen, with allowance for horse, $1,845; aggregating, $7,918.

Wind Cave National Park.

By act of Congress approved January 9, 1903 (32 Stat. L., 765), a tract of land in the State of South Dakota "beginning at the southeast corner of section thirteen, township six south, range five east, Black Hills meridian, South Dakota; thence westerly to the southwest corner of the southeast quarter of section sixteen, said township; thence northerly along the quarter-section lines to the northwest corner of the northeast quarter of section four, said township; thence easterly to the southwest corner of section thirty-four, township five south, range five east; thence northerly to the northwest corner of said section; thence easterly to the northeast corner of section thirty-one, township five south, range six east; thence southerly along the section lines to the southeast corner of section seven, township six south, range six east; thence westerly to the southwest corner of said section; thence southerly to the southeast corner of section thirteen, township six south, range five east, to the place of beginning," has been reserved and withdrawn from settlement, entry, sale, and other disposal and set apart as a public park, to be known as the Wind Cave National Park.

The entrance to the cave is about 12 miles southeast of the town of Custer and 12 miles east of the town of Black Hills, S. Dak., and is in a deep ravine, with the hills sloping back to an elevation of from 60 to 120 feet, with an old log cabin over the same. A story and a half frame building located on land secured under the homestead act and afterwards abandoned is used as headquarters by the superintendent of the park. The land within the limits of the park is of little value for grazing purposes and can be cultivated only in small patches.

The park by said act is placed under the exclusive control of the Secretary of the Interior, who, among other things, is authorized to prescribe rules and regulations and establish such service as may be deemed necessary for the care and management of the same; in the exercise of his discretion to rent or lease, under rules and regulations to be made by him, the cavern underlying the above-described lands

and also pieces or parcels of ground within said park for the erection of such buildings as may be required for the accommodation of visitors. All funds arising from such rentals or leases shall be covered into the Treasury of the United States as a special fund, to be expended in the care and improvement of the park.

The act setting aside the above-described lands for park purposes provided that in cases in which a tract covered by an unperfected bona fide claim is included within the limits of the park the settler or owner may, if he desires to do so, relinquish the tract to the Government and secure other land outside the park in accordance with the provisions of the law relating to the subject of such relinquishment of lands in the various forest reserves in the State of South Dakota, but no selections have as yet been reported.

At the time of the creation of the park there were 10 entries, covering 1,519.15 acres, 4 of which, covering 639.76 acres, have been canceled, and 1 entry of 160 acres has been suspended and will probably be canceled; 2 entries, covering 239.39 acres, appear to be bona fide and valid, and 3 entries, covering 480 acres, have been found proper in all respects and patents issued therefor.

The superintendent, under instructions from the Department, has constructed a barbed-wire fence, one-half mile square, around Wind Cave, for the better protection of the same from vandalism, built a cistern to supply water, and also four bridges at various places in the park which were found to be necessary. Considerable work has also been done on the roads in the park by day labor, under the supervision of the superintendent. He reports that no permits have been granted to campers, nor for driving stock through the park, and that no forest fires have occurred in that section during the past year, and he recommends that the entire park be fenced with a good barbed-wire fence as soon as practicable. In the sundry civil act of April 28, 1904, an appropriation of $2,500 was made for the management and improvement of the park. On May 28, 1904, Forest Supervisor Seth Bullock was directed to assume charge of the park and have the superintendent confer with him as to the administration of the same and submit his reports as to conditions in the park from time to time to the Department through him, as it was believed that the best interests of the park would be subserved by such action, and the superintendent would be benefited by the advice and experience of Mr. Bullock. No rules and regulations have yet been promulgated for its government, and none will be formulated until a representative of the Department can visit the park with a view to determining what is essential and necessary for the government and protection of the same.

The superintendent reports that a recent survey made shows that water can be brought from Beaver Creek to the Wind Cave, a distance of about 2½ miles, by gravity.

There were 2,900 visitors to the park during the past fiscal year.

Estimates for the park for the ensuing fiscal year have been submitted to Congress for an appropriation of $3,500 for the protection and improvement of and construction of trails, etc., in this reservation.

Sully's Hill Park.

By act of Congress approved April 27, 1904 (33 Stat. L., 319), entitled "An act to modify and amend an agreement with the Indians of the Devils Lake Reservation in North Dakota, to accept and ratify the same as amended and make appropriation and provision for carrying the same into effect," it is provided, among other things, that—

> The President is also authorized to reserve a tract embracing Sully's Hill in the northeastern portion of the abandoned military reservation, about nine hundred and sixty acres, as a public park.

Pursuant to such authority, the President, by proclamation dated June 2, 1904, in opening the said reservation, described the park by metes and bounds in the following terms:

> And saving and excepting lots 4, 5, 6, and 7 of sec. 10, the NW. ¼, the W. ½ of the SW. ¼, and lots 5 and 6 of sec. 15, lots 1 and 2 of sec. 9, the E. ½ of the NE. ¼, the SE. ¼ of the SE. ¼, and lots 3, 4, and 5 of sec. 16, T. 152 N., R. 65 W., of the fifth principal meridian, which are hereby reserved for public use as a park to be known as Sully's Hill Park.

This park lies on the south shore of Devils Lake, having about 2 miles of shore line, with its western boundary 1 mile east of the Indian school conducted in the old Fort Totten military establishment, and known as the Fort Totten Indian School. On the western boundary lies what is known as Sully's Hill, from which the park is named. The remainder of the park is for the most part covered with rugged hills. In the southwestern part of the park is a small body of water known as Sweet Water Lake, west of which the surface is generally level and the soil good.

The lower portion of the park and the hillsides are covered with timber or shrubs, and there is also an abundance of small fruits, such as raspberries, strawberries, plums, high-bush cranberries, juneberries, etc. The timber includes almost every variety found in the north, such as oak, elm, poplar, ash, box elder, balm of Gilead, willow, etc. There are also a number of very fine springs of fresh water, but they empty into small lakes or bogs, and form no running streams. The park is not known to contain any mineral of value, and the timber is of little commercial value; the stone found is in granite and limestone bowlders.

It is reported that there are a number of prehistoric mounds on the hilly portion of the park, which have been explored, and portions of human skeletons, stone, copper, and ivory trinkets taken therefrom.

Sully's Hill and Sweet Water Lake are much frequented by the people of North Dakota during July and August for rest and recuperation, after weeks or months of toil on the farms or of close confinement in offices and stores, as the State of North Dakota has very few wooded tracts for such purposes.

It has been held by the Assistant Attorney-General for the Interior Department that the Indian title to the lands embraced within the park are absolutely extinguished by the cession made to the Government by the Indians.

The post-office address of the park is Fort Totten, N. Dak., 1 mile west, and the railroad and telegraph address is Devils Lake, N. Dak., 12 miles northeast, on the Great Northern Railroad. The park can also be reached by team from Oberon, 12 miles west, on the Northern Pacific. A telephone line is projected from Devils Lake to Fort Totten and will be completed at an early date. A boat plies from near Devils Lake to Fort Totten most of the time during the open season.

On September 13, 1904, Mr. Charles L. Davis, in charge of the Devils Lake Indian Agency, N. Dak., was designated as acting superintendent of the park, as Mr. Davis, whose headquarters are near by, can for the present exercise the required control and supervision over the park until other provision can be made for the protection of the same. He recommends that the park be fenced on all exposed boundaries, and that a small dock be placed on the lake shore to accommodate visitors coming by boat on the north side, and that the roads be put in proper condition; also, that it may be necessary to build one or two bridges and make fills across boggy road crossings. He further recommends that several of the springs be properly excavated and walled up, and the undergrowth in the park in several places cleared away, with the view to making suitable camping grounds.

No estimate has been submitted to Congress for the protection and improvement of the park, although the acting superintendent has recommended the expenditure of $6,000 during the coming fiscal year for such purpose, as it is not entirely clear whether it was intended by Congress in setting aside this reservation as a public park, to place it on the same footing with the various national parks under the supervision of the Secretary of the Interior.

Hot Springs Reservation.

The report of Martin A. Eisele, superintendent of the Hot Springs Reservation, Ark., indicates that the total number of visitors during the year was 101,000, showing a gain of 100 per cent in the patronage of the resort during the past five years. This excellent record demonstrates the faith which the public has in the healing powers of the

waters, and their confidence in the careful management of the springs and baths by the Government.

The city of Hot Springs adjoining the reservation now contains a resident population of about 15,000, and has all the appurtenances of a metropolitan city. With its delightful climate, beautiful scenery, and the attractions of the town itself, to say nothing of the baths, the city of Hot Springs is one of the most interesting resorts in the country.

The original reservation of the springs by the United States was made by the act of April 20, 1832 (4 Stat. L., 505). Under the act of Congress approved March 3, 1877 (19 Stat. L., 377), the Hot Springs Commission established the boundaries of the reservation, laid out, surveyed, and platted the city of Hot Springs into convenient squares, blocks, lots, avenues, and streets. Most of this land not permanently reserved by the United States has already been sold to individuals. The streets, courts, and alleys have been ceded to the municipality. The permanent reservation as it exists to-day embraces 911.63 acres, which includes the ground covered by the various hot springs and also the four mountain reservations dedicated to public use. The Department has exercised supervision over the reservation since 1878, since which time many improvements have been made, both in the reservation itself and in the system of its operation.

There are 49 hot springs, from which flow approximately about 1,000,000 gallons of water daily, the temperature of the springs varying from 100° to 150° F. That these waters contain some wonderful curative quality can no longer be doubted, and the Department has adopted all reasonable suggestions which have been brought to its attention with reference to ascertaining the nature of this healing principle. A complete chemical analysis of the various springs was made in 1902, which, while valuable as a scientific reference table, does not indicate the presence of anything remarkable which could be regarded as the active curative agent residing in the waters.

With a view to determining whether the waters of the Hot Springs contained any radioactive properties, the Department during the year authorized Dr. Bertram B. Boltwood, of New Haven, Conn., to examine into the radioactivity of the waters, and his report upon the subject has just been received. In the introduction to his report Doctor Boltwood gives a lucid and interesting account of the present state of our knowledge concerning the radioactivity of matter, and a brief résumé of the history of discoveries relating to this phenomenon. He states that the phenomenon of radioactivity exhibited by certain substances consists in the spontaneous emission of radiant energy. Three elements are known to possess this phenomenon to a marked degree—thorium, actinium, and radium. Some ordinary substances are also

very slightly radioactive; but this is perhaps due to the presence of minute traces of the strongly radioactive elements. The rays sent out by radioactive substances are known as "Becquerel rays," and are complex in character, those from radium consisting of three different types, varying in the readiness with which they are absorbed by matter, and the extent to which they are deflected in a magnetic field.

When solutions of radium salts are allowed to stand in a closed vessel it is found that an extremely minute quantity of a highly radioactive gas gradually accumulates. This gas is known as the "radium emanation," and its radioactive existence is of relatively short duration. The walls of a vessel which has contained this radium emanation also become radioactive by what is called "induced" or "excited" activity, and the theory is that by the radioactive disintegration of the radium emanation a solid has been deposited on the surface of the wall which is itself radioactive. This solid is called "emanation X," and its rate of decay is very rapid. The emanation contained in any solid salt of radium can be entirely removed by dissolving the salt in water and boiling the solution. If the solution is evaporated to dryness, the solid salt will again be formed. This freshly prepared salt is found to be only 25 per cent as radioactive as the same salt before the removal of the gas emanation. Its radioactivity, however, will gradually increase on standing, due to the production of fresh quantities of emanation within it. The occurrence of radioactive properties in natural waters has been observed by various investigators; an examination by Curie and Laborde of the gases produced by the waters of various European mineral springs having recently shown the radioactivity of those waters.

In making an examination of the waters of the Hot Springs Reservation the samples were collected at the springs by Dr. J. Hyde Pratt, of Chapel Hill, N. C., and under his supervision were placed in sealed glass receptacles. Doctor Pratt also collected, wherever possible, the gases which rise from the springs. He also obtained samples of the tufa deposit formed by some of the springs on issuing from the ground. The various samples so collected were shipped to New Haven, Conn., where the tests were conducted. The method of examination of the waters used by Doctor Boltwood was to separate the gases and emanations contained in the waters by boiling the waters in an apparatus which is a modification of that described by Reichhardt, after which the emanation was measured by an electroscope similar to that used by Wilson. In expressing the results of his experiments, Doctor Boltwood found it necessary to devise a new system of standardization, which will permit the direct comparison of the results obtained with different waters and by different experimenters. The standard used by Curie requires the use of a small

quantity of pure radium bromide, which it is impossible for most investigators to procure.

The plan used by other investigators of expressing the result in the number of ions produced involves a standard which is uncertain and difficult to determine. The standard originated by Doctor Boltwood, and for which he is entitled to great credit, is the quantity of radium emanation set free when a known weight of uranium contained in a natural mineral is dissolved in a suitable reagent. The mineral used by Doctor Boltwood was pure uraninite from Sprucepine, N. C.

Doctor Boltwood describes in detail the methods pursued by him in his investigations, which were very exhaustive and covered a period of several months. The results of the electroscopic tests of the gases obtained by boiling the waters were very satisfactory, as they showed that the waters at Hot Springs are radio-active to a marked degree; and from other tests, taken to determine the properties of the emanation from the waters, it was found that the properties of these radio active gases were identical with those of the radium emanation.

On the other hand, when water from which the gas had once been taken was boiled a second time, after being allowed to stand, no radio-activity was detected in the gas obtained from the second boiling, and it was therefore concluded that little or no radium salts existed in the waters. This conclusion was strengthened by the fact that a test of the residue of the waters which had been left by evaporation also failed to disclose any sign of radio-activity of this solid substance. A sample from the tufa deposit, formed by some of the springs on issuing from the ground, was also tested, and it was found that the amount of radium contained in 100 grams of the tufa was less than one one-millionth of the quantity of radium, associated with an equal weight of uranium in pitchblende. Samples of the gas which arose from the springs were also tested, and its radio-activity was found to be less than that of an equal volume of gas obtained by boiling the waters from the springs. The following conclusions are reached by Doctor Boltwood as to the result of his investigations:

(1) The waters of the springs on the Hot Springs Reservation are all radio-active to a marked degree.

(2) The radio-activity of the waters is due to dissolved radium emanation (a gas), and not to the presence of salts of radium or other radio-active solids.

(3) The tufa deposited by the springs does not contain appreciable quantities of radium compounds.

The theory as to the source of the heat which is now generally accepted is that advanced by the United States Geological Survey, viz, that the heat comes from a great body of still heated, igneous rocks intruded in the earth's crust by volcanic agencies and underlying a

large part of central Arkansas. Deep-seated waters converted into vapors by contact with this "batholith" of hot rock probably ascend through fissures toward the surface, where they probably meet cold spring waters which are heated by the vapors, or these vapors are condensed and flow to the surface as hot water.

The principal diseases cured or benefited by the use of the waters, both internally and externally, through the medium of baths, are rheumatism in various forms, blood disorders of a chronic character, gout, stiff joints, sciatica, paralysis, spinal diseases; eczema, psoriasis, acne, and various other forms of skin diseases; female diseases, especially sterility and leucorrhea; malaria, alcoholism, excesses from tobacco habit, and nervous affections. From the experience of resident physicians of standing, however, the superintendent states, many diseases which have heretofore been regarded as not affected by the use of the baths (and even some in which it has been thought that the baths were contraindicated) have recently been to some extent relieved by the use of the waters.

Under the authority of the act of Congress approved March 3, 1891 (26 Stat. L., 842), rules and regulations have been formulated by the Department from time to time for the government of the Hot Springs Reservation, the management of the bath houses, and the protection of persons taking the baths. Among other objects sought to be accomplished by the regulations adopted June 6, 1903 was the suppression of the nefarious and demoralizing practice of drumming by physicians, which has flourished at Hot Springs for many years. A vigorous crusade had been begun against this evil by the various local societies, assisted by the doctors of standing in the community, and a new State law was passed regulating the practice of medicine, which had for one of its objects the suppression of the "drumming" evil. With a view to assisting in wiping out this practice, and in order to afford to persons taking the baths some protection against fraud and quackery, the Department adopted a regulation prohibiting persons under medical treatment from taking the baths unless such persons were the patients of physicians duly registered in the office of the superintendent; and by another regulation provision was made for a medical board to pass upon the character and qualifications of physicians desiring to prescribe the waters. It was expressly provided that registration should be refused to any physician known to engage in drumming for custom. Subsequently, a Board of Medical Commissioners was appointed, which received and considered the applications of a number of physicians, and as a result of its recommendation the names of seventy-seven physicians were placed upon the register. Certain of the rejected physicians thereupon obtained an injunction in the United States district court against the superintendent, restraining him from interfering with their patients, upon the ground that

the act of 1891, above mentioned, did not authorize the Secretary of the Interior to adopt regulations relative to the qualifications of physicians prescribing the baths.

Subsequently to this decision the act approved April 20, 1904, was passed, entitled "An act conferring jurisdiction upon the United States commissioner over offenses committed in a portion of the permanent Hot Springs Mountain Reservation, Arkansas." By section 4 of this act ample powers are conferred upon the Secretary of the Interior to provide for the registration of qualified physicians. Drumming for custom by such physicians is prohibited, and it is made a misdemeanor for any physician not registered to issue a prescription to a patient authorizing him to take the baths. New regulations embodying the provisions of the foregoing act were promulgated October 31, 1904, and a new medical board was appointed, consisting of William H. Barry, M. D., chairman, Capt. Samuel L. Steer, U. S. Army, and Charles D. Greaves, of Hot Springs, Ark. As a result of this action it is believed that the long fight against the drumming evil, which has done so much injury to Hot Springs and its visitors, is now practically won. A copy of the new regulations is hereto appended, page 323, Exhibit N.

There are 25 leases providing for the use of hot water from the reservation, the total number of tubs operated being 551. One new lease was granted during the year to Jodd & Aldrich for a bath house of 12 tubs, known as the "Crystal Bath House," for the exclusive use of colored people. One lease expired by limitation during the year and was abandoned by the parties in interest.

The total number of paid baths during the year was 602,540; total number of complimentary baths, 11,168. The total amount received by lessees for baths was $188,387.05.

The following table shows the several individuals, firms, and corporations now holding leases for hot water from the Government reservations, together with the date of each lease and the time of its expiration:

Name of bath house.	Lessee.	Tubs.	Date of lease.	Expiration of lease.
Alhambra	Alhambra Bath House Co	24	Feb. 28, 1894	Feb. 28, 1914
Arlington	Arlington Hotel Co	40	Mar. 3, 1892	Mar. 2, 1912
Majestic	Avenue Hotel Co	20	Jan. 1, 1903	Dec. 31, 1912
Ozark Sanitorium	Butterick Publishing Co	8	Sept. 16, 1898	Sept. 16, 1905
Eastman	New York Hotel Co	40	May 12, 1892	May 12, 1912
Great Northern	Fannie G. Williamson	19	May 25, 1897	May 15, 1912
Hale	Roots & Eastman	26	Jan. 1, 1893	Dec. 31, 1907
Horse Shoe	D. Fellows Platt	30	Jan. 1, 1895	Dec. 31, 1909
Hot Springs	C. H. V. & G. M. Smith	16	Jan. 1, 1903	Dec. 31, 1912
No House	Hot Springs Medical Co	4	(a)	July 24, 1904
Imperial	Fred N. Rix and Mary E. Barnes	25	Jan. 1, 1902	Dec. 31, 1906
Lamar	M. C. Tomble and D. C. Buckstaff	40	Jan. 1, 1897	Dec. 31, 1916
Magnesia	Chas. B. Platt	30	Jan. 1 1895	Dec. 31, 1909

a Lease expired.

Name of bath house.	Lessee.	Tubs.	Date of lease.	Expiration of lease.
Maurice	Maurice, Convers & Maurice	24	Jan. 1, 1897	Dec. 31, 1916
Ozark	F. B. Latta and F. P. Sorrells	26	Jan. 1, 1904	Jan. 1, 1914
Palace	Samuel W. Fordyce	23	Jan. 12, 1893	Dec. 31, 1906
Park	Park Hotel Co	40	May 12, 1892	May 12, 1912
Rector	Henry M. Rector	12	(a)	Apr. 16, 1904
Rockafellow	Mahala J. Rockafellow	18	July 1, 1901	June 30, 1916
St. Joseph's Infirmary	Sister Scholastica	10	Feb. 1, 1904	Feb. 1, 1914
Superior	Robert Proctor and Chas. N. Rix	16	Sept. 15, 1896	Sept. 14, 1906
Waverly	New Waverly Hotel Co	20	Mar. 24, 1893	Mar. 24, 1913
Rammelsberg	Jeanette Hogaboom, Aaron H. and Milo R. Buckstaff.	18	Jan. 1, 1899	Jan. 1, 1909
Moody	Nicholas M. Moody	10	July 1, 1900	June 30, 1910
Crystal	M. H. Jodd and A. P. Aldrich	12	Aug. 1, 1903	Aug. 1, 1913

a Lease expired.

The following table of rates for a course of 21 baths and for single baths shows the rates at present in force:

Name of bath house.	Course of 21 baths.	Single bath.	Name of bath house.	Course of 21 baths.	Single bath.
Arlington	$10.00	$0.50	Ozark	$4.00	$0.25
Alhambra	5.00	.30	Ozark Sanitorium	6.00	.35
Majestic	7.00	.40	Park	10.00	.50
Eastman	10.00	.50	Palace	7.00	.40
Great Northern	7.00	.40	Rockafellow	6.00	.35
Hale	7.00	.40	Rammelsberg	3.00	.20
Horse Shoe	5.00	.30	Superior	6.00	.35
Hot Springs	7.00	.40	St. Joseph's Infirmary	6.00	.35
Imperial	8.00	.45	Waverly	6.00	.35
Lamar	7.00	.40	Moody	8.00	.45
Magnesia	5.00	.30	Crystal (colored)	5.00	.30
Maurice	7.00	.40			

The above rates are fixed by the Department. The Department also fixes the rate charged by the attendants, which is $3 per course of 21 baths or 15 cents for a single bath in all bath houses, regardless of the rate of the bath house. The rates of the bath houses are adjusted on the basis of the accommodations and furnishings of the several houses. The superintendent has recommended, however, that the rates be readjusted along equitable lines, so as to meet conditions which have arisen since the adoption of the present schedule, and the matter will receive the early consideration of the Department.

The total receipts by the Government from the reservation for the year were $18,430. The total disbursements for the same period, including all amounts paid on account of salaries, incidental expenses, improvements, and regular and fixed charges, were $16,502.92. This amount covers only the regular and fixed expenses of maintaining the reservation, and does not apply to amounts expended under appropriations.

The improvements completed during the year embrace the new United States free bath house, which has been constructed under an appropriation contained in the sundry civil act of June 28, 1902 (32 Stat. L., 456); the completion of West Mountain road; the construction of additional storage reservoirs for hot water, and the construction and repair of walks and footpaths over the mountains.

The new free bath house contains individual tubs and has been enlarged and equipped in a manner which gives to the indigent bathers all the conveniences enjoyed by bathers at private bath houses, including heat, light, and ventilation, as well as private lockers for clothes. The new bath house was completed in January, 1904, and when it was opened to the public the superintendent states that an enormous number of applications for baths began to come in, so that to meet the demands required the exercise of great patience and hard work on the part of the management. The fame of the new free bath house has become so widespread that the superintendent believes the applications for baths will far exceed the capacity of the house.

West Mountain road has been extended from Canyon street to Brook street on the north and from Hawthorne street to a junction with Prospect avenue on the south. The total length of this driveway, including approaches, loops, and switchbacks, is a trifle over 4 miles. It has easy grades, not exceeding 4 per cent at any point; has safe width and turns, and is located so as to give the most picturesque view of the city from north to south. The mileage of the Government roads is now approximately 10 miles, divided as follows: Hot Springs Mountain, 4 miles; North Mountain, 1¾ miles; West Mountain, 4 miles.

By the completion of the new storage reservoirs provision has been made for bathing the people against a possible shortage of water. The storage capacity heretofore existing was not adequate to supply the demand much longer at the present rate of expansion of business. The storage capacity now amounts to approximately 550,000 gallons daily, and includes considerable water which formerly ran to waste. Almost all the water is now collected and utilized and sent out through the general distributing system.

Walks and footpaths have been constructed from Canyon, Mountain, and Court street entrances to West Mountain and taken to the summit of the mountain. Approaches and extreme elevations have been overcome by stone steps and stairways. These footpaths abound in romantic and picturesque situations and add a measure of comfort and convenience to pedestrians who enjoy mountain climbing.

Recent inspection of the arch which extends from Whittington avenue on the north to Malvern avenue on the south shows it to be apparently in good condition and that no repairs are necessary at this time. This work was completed in 1884. It is 17 feet wide and 10 feet high at crown of arch, and covers a distance of 3,500 linear feet.

The superintendent recommends that the lakes now in Whittington Reserve Park be filled in and converted into part of the park proper. These lakes are considered a menace to the healthfulness of that part of the city, and have been condemned by the board of health. He recommends an appropriation of $6,000 for this purpose.

The superintendent also recommends that an appropriation of $10,000 be made for cutting out undergrowth and cleaning up the mountain parks by removing stone, deadwood, vines, and undergrowth, trimming up trees, etc., in order to extend the park features of these mountains.

He also recommends the condemnation and sale of the old boilers and pumps, and other appurtenances of the original pumping and distributing plant, as the same can be of no further use in connection with the work of the reservation.

The superintendent also renews his recommendation for the sale of the remaining unsold Government lots. This recommendation has been made for several years past, and the superintendent states that a more opportune time for the disposal of the lots than the present could hardly be selected. There are 154 lots scattered through the city, mostly in the suburbs, and in many instances they act as a barrier to municipal improvements. A board of appraisers, consisting of the register and receiver of the Little Rock land office and the superintendent of the reservation, was recently appointed for the purpose of making an appraisal of these lots. The appraisal has been made and the report thereof submitted to the Department, the value of the lots as appraised being $82,025. The superintendent recommends that an early sale of these lots at public auction be made; that the lot lines be established by corners with white wood posts, and that signboards be put up showing the number of the lot and block, the dimensions, and the appraisal, so as to give the public definite information as to location, size, and value. The matter of the sale of these lots will be taken up by the Department for consideration at as early a date as practicable.

By an act of Congress approved April 12, 1904, the law authorizing the Department to grant water privileges to bath houses was amended so as to permit the Secretary of the Interior to also grant to any hotels having bath houses attached the privilege of erecting tubs and using the water in the private rooms of such hotel, as well as in the bath house adjoining. Under this act the Department has granted two hotels the privilege of erecting bath tubs and receiving hot water in connection with private rooms of the hotels, as follows: Arlington, 10 tubs; Eastman, 9 tubs.

By an act of Congress approved March 22, 1904, entitled "An act to authorize an exchange of sites for the public buildings of Garland County, Arkansas," the original plat of ground granted to the county

of Garland by the act of March 3, 1877, known as block 114, consisting of 3.62 acres, has been reconveyed to the United States by the county, and in lieu thereof the United States has set apart for the public buildings of the county lots 1, 2, 9, and 10, block 94, of the city of Hot Springs. The act requires that a public building, to cost not less than $75,000, be erected upon the site within three years by the county of Garland.

The Department, in conjunction with the city of Hot Springs, has made a very creditable exhibit at the Louisiana Purchase Exposition. This exhibit has been assigned space in the Government Building, and assumes the general shape of a crystal grotto, composed of natural Hot Springs quartz crystals, tufa deposits, novaculite whetstone, and other natural rock. In the exhibit are characteristic views of the reservation, reproductions of springs, exhibits of water, and other things of interest pertaining to the reservation and city. The exhibit has met with popular favor and is said to be one of the most attractive features of the Government exhibit.

The sundry civil act of March 3, 1901 (31 Stat. L., 1188), provides, among other things, as follows:

SEC. 4. That the Secretary of the Interior be, and is hereby, authorized and directed to determine the value of certain condemned buildings formerly located on Hot Springs Mountain Reservation, and on the east side of Valley street, in the city of Hot Springs, in the State of Arkansas, which buildings were condemned by the Hot Springs Commission, and proof of value taken by said Commission, under authority of law, and which were destroyed by fire on the night of the fifth day of March, eighteen hundred and seventy-seven, before said Commission had issued certificates for the value thereof, as they were authorized and directed, and did afterwards do for buildings similarly situated, but not burned. That the value of each building condemned and burned shall be determined by the Secretary from the petitions and evidence filed before said Commission by the owners or occupiers thereof, by order of said Commission, and now on file in the Interior Department, or such other evidence as the claimants may file, and after such investigation as he may think proper.

SEC. 5. That a sum of money sufficient to pay for such investigation, and the claims so ascertained and fixed by the Secretary of the Interior be, and is hereby, appropriated, out of any money in the Treasury not otherwise appropriated, and the Secretary of the Interior is hereby authorized and directed to pay to such person or persons, claimants, their executors, administrators, the sum or sums of money equal to the values so as aforesaid found by him.

SEC. 6. That the Secretary of the Interior is required to report to Congress the results of his action under the foregoing sections.

Pursuant to the requirements of the statute, I have to report that 32 claims have been presented for compensation under the terms of the act. No claims were allowed during the present fiscal year. The total number of claims allowed to date is 19, and the amount of such claims as allowed aggregates $48,077. Eleven claims are now being considered by the Commissioner of the General Land Office under instructions from the Department. The following table shows the

numbers of the claims now pending, the names of the claimants, and the amount of each claim respectively:

No.	Name.	Estimated value.	No.	Name.	Estimated value.
462	Nancy Davis	$2,500	712	Lee Greenleaf	$250
569	Dennis Watts	150	725	James Blahut	390
597	Charles F. Vatterlin	300	741	Louisa B. Saddine	175
606	Sarah Hale et al	(a)	756	James J. Byrne	1,550
678	Christopher Hagen	420	832	Baptist Church	850
679	Christ H. Dawers	200		Total	6,785+

a Unknown.

Two claims have been rejected for want of proof, as follows: Leo Meyer, No. 484, and Elbridge M. McDonald, No. 563.

The following estimates have been submitted to Congress for appropriations for the fiscal year ending June 30, 1906: Cutting out the undergrowth and cleaning up surface of the mountains on the reservation, $5,100. Filling up lakes in and otherwise improving Whittington Lake Reserve Park, $6,000.

Casa Grande Ruin.

This reservation, containing about 480 acres, was set aside by Executive order dated June 22, 1892, under the act approved March 2, 1889 (25 Stat. L., 961), and is located near Florence, 18 miles northeast of Casa Grande station on the Southern Pacific Railroad, in Pinal County, Ariz. It embraces the S. ½ SW. ¼ SW. ¼ SE. ¼ sec. 9; NW. ¼ W. ½ NE. ¼ NE. ¼ SW. ¼ and NW. ¼ SE. ¼ sec. 16, T. 5 S., R. 5 E., Gila and Salt River meridian.

The building thereon was erected by one of the most advanced races once inhabiting the Southwest, and is a most unique and interesting prehistoric ruin, having been discovered by one Padre Kino in 1694. It was built of a material known as "cajon," i. e., puddled clay, molded into walls and dried in the sun, and is of a perishable character. The building was originally five or six stories high, but the walls have gradually disintegrated, owing to the action of the elements. It covers a space 59 feet by 43 feet 3 inches square, with an outer door on every side, and contains five rooms or compartments on the ground floor.

During the past fiscal year $2,000 were expended for the erection of a painted corrugated iron roof over the ruin for the better protection of the same from the elements.

The custodian, Mr. Frank Pinkley, has resided continuously on the reservation during the past fiscal year, and reports a material increase in the number of visitors to the ruin, and that a widespread interest has been manifested in the same.

An estimate has been submitted to Congress for an appropriation of $3,000 for the scientific excavation of the mounds and ruins on the reservation.

In this connection, attention is invited to the recommendation for such an appropriation contained in my last annual report, which I hereby renew. The value of the ruins would be greatly enhanced if, as a result of the work performed under that appropriation, some weapons, industrial implements, or domestic utensils should be discovered which would throw any light upon the manners and customs of the race formerly inhabiting the ruins.

It is desired that such work be done under the direction of the Smithsonian Institution, and the Secretary has advised me that the Institution would gladly take charge of the same, if authorized by Congress, stating in regard to the importance of the subject:

> I can not speak too strongly, as under existing conditions nonscientific explorers are fast pillaging the most interesting sights and destroying records which history and science should have forever at their disposal. Furthermore, the agents of foreign museums and associations are rapidly carrying abroad these important traces of our aboriginal inhabitants, which should properly be preserved at our own capital, this being in accordance with the policy of most foreign countries having antiquities worthy of preservation.

ELEEMOSYNARY INSTITUTIONS.

The act of Congress, entitled "An act to establish a board of charities for the District of Columbia," approved June 6, 1900 (31 Stat. L., 664), provides, among other things, that said Board of Charities—

> shall visit, inspect, and maintain a general supervision over all institutions, societies, or associations of a charitable, eleemosynary, correctional, or reformatory character, which are supported in whole or in part by appropriations of Congress made for the care or treatment of residents of the District of Columbia; and no payment shall be made to any such charitable, eleemosynary, correctional, or reformatory institution for any resident of the District of Columbia who is not received and maintained therein pursuant to the rules established by such Board of Charities, except in the case of persons committed by the courts or abandoned infants needing immediate care.

The Attorney-General on the 12th of October, 1900, in construing this act, held that the Government Hospital for the Insane, Freedmen's Hospital, the Columbia Institution for Deaf and Dumb, and the Washington Hospital for Foundlings, created by prior laws and placed under the supervision of the Secretary of the Interior, came within the terms of said act of June 6, 1900, and that—

> with the exception that the Board of Charities is given the general supervision of these institutions and, under the order of the District Commissioners, the power of investigation, with the duty of submitting a report and recommendations to Congress, the powers and duties of the Secretary of the Interior are unchanged by the act of June sixth, nineteen hundred, and remain the same as before its enactment.

In previous annual reports attention has been directed to the fact that a divided supervision or control over the class of institutions enumerated, especially where the lines of division are uncertain and not easily understood, would have a tendency to embarrass the immediate management of each institution and to detract materially from the desired standard of excellence. The recommendation heretofore made in this matter that as to each of said institutions the authority, etc., of the Board of Charities be transferred to the Secretary of the Interior, or the authority and responsibility of the Secretary of the Interior be transferred to the Board of Charities, is accordingly renewed.

Considering the character and purpose of each institution, and the extent of the supervisory authority of the Secretary of the Interior over the same prior to the passage of the above-mentioned act, probably the best results could be obtained if the administration of the affairs of the Government Hospital for the Insane, Freedmen's Hospital, and the Washington Hospital for Foundlings were placed exclusively under the supervision of the Secretary of the Interior. A form of bill, which if enacted by Congress will effectuate this recommendation, is hereto appended, page 316, Exhibit G.

The Government Hospital for the Insane.

The annual report of the board of visitors shows that the number of patients in the hospital at the beginning of the year was 2,369; there were admitted during the year 766 patients, making a total under treatment of 3,135. During the year there were 243 deaths; 235 were discharged recovered, 130 improved, 34 unimproved, and 1 not insane, leaving on the records at the close of the year 2,492. The number of admissions, 766, exceeds any previous year. The number of deaths, 243, was 7.75 per cent of the whole number under treatment.

It is estimated that $220 per capita is required for the maintenance and care of the patients.

During the year the contract work on the hospital extension, comprising 15 buildings, was completed, representing approximately an outlay of $1,500,000. The finishing of the contract work upon these structures, however, did not put them in condition for occupancy. They were left without paint, without water, and in many other ways were incomplete. There were no walks nor roadways prepared, so that in wet weather they were almost inaccessible. Special appropriations were made by Congress providing for the fitting of the buildings for occupancy. Contracts were let and much has been accomplished. An 8-inch sewer pipe has been laid from the west side of the grounds to the east side, 1,498 feet. Drainage and sewer connections have been made from the main sewer to 9 buildings, including the power house.

A 6-inch water main has been laid from the west to the east side of the grounds, a length of some 1,200 feet, and water connections made to 12 buildings. The contracts for screen doors and windows and for window guards throughout the new buildings have been completed. Contracts have been completed for making necessary hot and cold water connections in the various buildings of the extension, and the hot-water heaters placed in position therein. Runways have been provided throughout the various attics, so that different parts will be accessible for making repairs, running wires, etc. Kitchen furniture, including ranges, urns, steamers, etc., have been installed in 4 buildings and Toner kitchen, and an ice chest and coal vault built in connection with each.

The interior walls of nine buildings have been painted; rubber stair treads have been laid in six buildings; window shades have been put in five buildings; and a hydraulic freight elevator has been installed in Toner kitchen. Electric-light fixtures have been put in position under contract in the Administration Building, and a contract let for the installation of a complete hydrotherapeutic outfit for two buildings; contracts have been let for furnishing these three buildings and most of the furniture provided for therein is on the grounds. The subway under Nichols avenue has been completed, thus furnishing a ready means of communication between the two portions of the hospital grounds without crossing the public thoroughfare. Four thousand one hundred and sixty linear feet of macadam road, 16 feet wide and 6 inches thick, has been completed from the old road, passing new buildings and connecting the west side of the grounds with the east side of Nichols avenue. Two thousand three hundred and sixty linear feet of cobble gutter has been laid. The central lawn has been plowed and topsoil spread ready for seeding. About 800 linear feet of 10-inch pipe has been laid for caring for surface drainage.

The central power, heating, and lighting plant has been in operation for some time; it furnishes the hospital extension with heat and the entire institution with light.

On the 2d of June, 1904, the first building of the extension was ready for occupancy, and 120 patients were removed from the overcrowded portions of the main building. Three other buildings, including the Nurses' Home, had been completed and occupied August 23.

In addition to the work connected with the placing in commission the buildings of the extension, other improvements have been undertaken during the year. Four railroad tracks were laid over the coal pockets at the new power house, the trestle work of their support being constructed by the hospital force; four additional artesian wells have been bored, making eight in operation, sufficient to furnish the water supply; a pasteurizing apparatus has been installed; plans for

the remodeling of the laundry plant are under way, looking especially toward the introduction of proper apparatus for sterilizing infected clothing and bedding; a solarium has been built in the Atkins group of buildings, and accommodations provided in one of the wards connected therewith for white tubercular males.

Plans have been prepared for having a separate supply of water taken from the river for use at the power house and the laundry, and in the condensing apparatus at the cold-storage warehouse. The river water being contaminated with sewerage is unfit for consumption and should therefore not be pumped through the same pipes as supply the hospital with drinking water. A contract was let for moving the pathological laboratory and plans prepared for remodeling the structure, and the work is well under way; this building will contain an amphitheater for autopsy work, with seating capacity for forty persons.

The work of providing fireproofing and fire escapes, for which a special appropriation of $33,600 was made last winter, has been progressing as rapidly as circumstances permitted. Outside fire escapes are in process of erection upon the laundry, Atkins Hall, East Lodge, and the east wing of the main building, and two fireproof stairways are being constructed in the Relief Building. With the occupancy of the new buildings, West Lodge, which has been occupied by upwards of 200 male patients, and was very badly overcrowded and sadly in need of repairs, was vacated.

The more recently built portion of this structure was of fireproof construction; the old portion, however, was very much dilapidated; floors were in poor condition, and the joists rotten in many places. This was considered to be the most dangerous place in the institution in respect to the possibility of fire. This entire structure is now being remodeled, fireproof construction replacing throughout the old wooden floors and joists. To further safeguard the hospital from danger of fire the use of oil lanterns throughout the wards by night watches has been completely done away with. In addition to this work a very complete fire-alarm system is being installed by the National Automatic Fire Alarm Company of Washington.

The general health of the hospital has been unusually good. Special attention is directed to the great decrease in the number of cases of malaria and the total absence of typhoid infection during the past year. In 1896, 47 per cent of the entire population of the institution were under treatment for malarial troubles; in 1901, 107 cases were reported; in 1902, 97 cases; in 1903, 44 cases; during the past year only 2 cases are reported, in both of which the æstivo-autumnal form of parasite was found. This remarkable decrease of malaria in the hospital, the board states, is without doubt due to the complete drainage of surface water, absence of cesspools, and the more liberal use of window screens.

In view of the numerous epidemics of typhoid infection which have occurred in this country, and the marked increase in the number of cases in the District of Columbia, it is very gratifying to state that the hospital during the past year has been entirely free from typhoid infection. It will be remembered that there were 29 cases, 3 of which, with fatal results, were given in the last report. These cases were traced to the use of hydrant water from the Potomac River (Eastern Branch), which was contaminated. During the past year the water supply has been taken from the artesian wells, which have been free from infection at all times. The new pasteurizing apparatus will safeguard still further the hospital population from infection.

In a large institution of this character questions of sanitation are always prominently in evidence. In the overcrowded condition in which this hospital has been until the past year a great many problems of this nature remained of necessity unsolved. Attempt now is being made, as the population is being shifted from one building to another, thinning it out in places where it is overcrowded, to attack these problems. Specifically it is intended that, as the new buildings are being occupied, that some of the older buildings which are in need of repairs and improvements will be vacated so that such work as may be necessary can be done. The West Lodge is being renovated; the Toner Building will be vacated in a few days, and previous to reoccupying it the plumbing will be carefully gone over and a considerable portion of it which is of old pattern and inclosed will be replaced by modern, exposed work.

A further advantage which will be gained, and toward which steps have already been definitely taken, is the better classification of the hospital population. The white male epileptics are already being segregated in two adjoining wards of the Relief Building, where they can be looked after to much better advantage than when scattered throughout the hospital. It is expected that this work of classifying patients will be completed during the present year and that an improvement in the general health of the hospital population will result from the segregation of those patients suffering from tuberculosis. To this end, as heretofore stated, a complete pasteurizing outfit has been installed and will be in operation shortly, and constant supervision is maintained over the occurrence of tuberculosis in the hospital herd, from which the greater portion of the milk used is obtained. This herd, originally tested in 1900, was shown to have 65 per cent of animals suffering from tuberculosis. At its last test, in February of 1904, the percentage was only 3½.

During the year in the pathological department 103 post-mortem examinations were made, in most cases including all the organs of the body. In all interesting cases specimens were preserved; those

demanding microscopic study have been hardened and preserved, awaiting the completion of the laboratory for histological investigation. Whenever possible, photographs were taken of valuable specimens in morbid anatomy, and the collection of pictures now reaches several hundred.

Of the cases examined, 32 were of chronic dementia, 20 of senile dementia, 12 of chronic melancholia, 10 of paresis, 7 chronic mania, 4 acute mania, 4 of chronic epileptic dementia, 3 chronic epileptic mania, 3 of post-paralytic dementia, 2 of organic dementia, 1 acute epileptic mania, 1 acute melancholia, 2 primary dementia, 1 of delusional insanity, and 1 of imbecility.

A study of the number of deaths due to tuberculosis during the past twenty years shows that there has been a gradual decline in the percentage of deaths from this disease, and that for the past year the percentage, calculated upon the total number of deaths, is less than for any year since 1885. In commenting on this, the board says:

> It is fair to presume that the excellent showing this year is in part due to a more careful supervision of the health of the hospital herd, from which the supply of milk is derived, and in part to the segregation of tubercular patients.

The board of visitors, in discussing the legislative needs of the hospital, state:

> More specific legislation, particularly as to the commitment of the insane from the District, is to be desired. This should be along lines already followed out in many of the States and, on general principles, fairly well established. The most crying defect in the method now in vogue is the necessity of trying each case in open court. There is absolutely no reason or necessity for this, and it can only have the effect of humiliating both the patient and the patient's relatives. It is time that in this community, at least, insanity should be appreciated for what it is—a form of illness—and legal requirements that place a sick man on the same level as a common criminal have no place in an enlightened community.
>
> The superintendent suggests, along these same lines, that the name Government Hospital for the Insane have the objectionable word insane left off, and that the institution be called merely the Government Hospital. The official stationery of the hospital goes all over the United States and into thousands of homes, and contains printed thereon reference to the one disease in the whole category of human ailments about which people are most sensitive. It is unnecessary that this should be so, and it could easily be remedied.
>
> For several years back an attempt has been made to have a disbursing officer for the hospital appointed. The bills introduced, however, have provided such an officer who is removed absolutely from the control of the superintendent. The board of visitors and the superintendent have always opposed this arrangement solely from the standpoint of the best interests of the hospital and what they believed to be sound administrative policy. It is not thought wise to create an office which derives its source of authority from without the hospital. This is a step toward creating separate centers of authority which sooner or later must clash. The board and the superintendent think, however, that the increased size to which the institution has grown warrants such an officer to relieve the superintendent of the burdens of the fiscal responsibility. He should be appointed by the superintendent, derive his authority from him, and act under his instructions.

In the past there has been much controversy over acquiring the land immediately adjoining the hospital property on the south, and on the west side of Nichols avenue, together with a further extension of this land known as Wilson Park. Further extension of the hospital, particularly the female portion, would naturally take place in this direction if the land was available, and it is hoped that at the coming session of Congress its desirability will be appreciated so that proper proceedings may be initiated looking toward acquiring it.

In my last annual report I called attention to the necessity for the enactment of a law governing the payment and disposition of pension money due to inmates of the Government Hospital for the Insane, and stated at that time that it was my purpose to prepare a draft of a bill upon the subject and transmit it to the proper committees of the Senate and House for consideration. This action was taken (see Exhibit H, on page 316 of Appendix) and bills, Senate 3781 and H. R. 12152, are now pending in Congress. This matter is of much importance in the administration of affairs of the hospital, and I most urgently recommend favorable action in the premises.

The board of visitors, in their report for 1903, in discussing the necessity for the character of legislation above indicated, stated that—

Your attention is also respectfully called to the necessity for amending the law relating to the disposition of pensions of patients who have been admitted to the hospital from the National Homes for Disabled Volunteer Soldiers who have no dependent relatives. The law now provides that in all such cases the pension shall be paid to the superintendent for the support of the patient and be credited to the general support appropriation without regard to the amount. When these pensions are credited to the general fund of the hospital they can not be used for the special benefit of the patient, and as the regular charge for board is $5 per week, the pension in some instances exceeds this amount. In all cases it is desirable that at least a portion of the pension should be available for special use of the patient for small purchases which the hospital can not ordinarily supply. It is therefore recommended that the law be so amended as to permit all pensions of patients to be paid to the superintendent while the pensioners are inmates of the hospital, and that he be authorized to use the pension, under regulations established by yourself, for the benefit, first, of any dependent relatives under the law, and second, for the patient himself, the regular charge for board alone being credited to the general fund of the hospital in such cases as may be determined to be proper. The law should also authorize the disposition of such funds accruing from this source in case of deceased pensioners which are unclaimed, and of which a considerable amount is now accumulated.

The board is also impressed with the necessity for amendment to the law regulating commitment to the hospital and the discharge of patients therefrom. It is particularly important that authority be given the superintendent to grant trial visits before discharge to such patients as are believed to be in condition to warrant it, and also to discharge to the custody of friends such as can be safely cared for outside of a hospital, and who can not be further benefited by hospital treatment.

In discussing the matter of the change in the law relative to disbursements of money for the Government Hospital for the Insane, I stated in my last annual report that—

After the decease of the former superintendent a committee was appointed to examine his books and accounts as a disbursing agent of the institution. In reporting thereon, after referring to the fact that his accounts were found to be correct,

balanced, and closed, and so reported by the accounting officers of the Treasury, they state, referring to the matter of the disbursements of the institution, that—

"Your committee are of the opinion, however, that the best interests of the public service would be subserved if the disbursement of the appropriations for the hospital was taken therefrom and placed under the direct supervision of the Secretary of the Interior, to be disbursed by the disbursing officer of the Department of the Interior on vouchers properly certified by the superintendent of the hospital and approved by the Secretary of the Interior. One of the principal reasons advanced why such a change should be made is that the superintendent of the hospital is now the purchasing officer, the receiving officer, the disbursing officer—three offices in one. The act of March 3, 1855 (sec. 4837, Rev. Stat.), made him a special disbursing agent. Under existing United States Treasury regulations he is required to render his accounts monthly, and no advance of funds is allowed him in any month in excess of his bond. On the contrary, the disbursing officer of the Department is required to render his accounts only quarterly, and is not confined to the limit of his bond in advances from the Treasury, so that money could always be promptly obtained from the Treasury for the payment of the bills of the hospital upon presentation of same. Under the present condition of affairs it has often occurred that persons selling goods and supplies to the hospital, expecting to receive cash when such have been furnished, have been compelled to wait weeks and months for payment. This condition of affairs should not be tolerated by the Department for a moment. Business methods prevail in every other branch of the Department of the Interior, and its creditors are promptly paid their bills on presentation of the same. Such should be the rule with the bills against the Hospital for the Insane. The merchant sells his goods to the hospital at a trifle above cost, expecting to receive promptly cash payment for the same. Failure to so pay him frequently results in serious embarrassment to his business."

The necessity for the change in the law above recommended in regard to disbursements is further evidenced by the fact that in order to prevent embarrassment in the matter of payments, under contract for the work on the extension, to be made from the appropriation, $975,000, for the extension of the Government Hospital for the Insane, it became necessary, on the 10th day of August, 1901, to appoint Mr. George W. Evans, the disbursing officer of this Department, a "special disbursing agent for the erection of an extension at the Government Hospital for the Insane." For the disbursement of these moneys he was required by the Secretary of the Treasury to give an additional bond of $25,000, which was approved on the 18th day of October, 1901.

Immediately after the passing away of Doctor Richardson, on the 27th of June, 1903, a committee consisting of two competent officers, one from the Treasury Department and one from this Department, was designated to examine his books and accounts as disbursing agent of the hospital. The committee, as a result of its examination, reported that his accounts were found to be correct and all public moneys properly accounted for, and in its report embodied, among other things, the following recommendation:

The superintendent is, under the law, the responsible disbursing agent of the institution for these funds, in addition to his other duties. (Sec. 4839, R. S.) In

addition to the funds for the support of the institution, the superintendent makes disbursements from the appropriations, "Repairs, Government Hospital for the Insane," and "Buildings and grounds, Government Hospital for the Insane." From a careful inspection and examination of all questions involved in the disbursement of these funds, we are of the opinion that the interests of the service, and particularly of the hospital, would be served should the superintendent be permanently relieved from the responsibility for the disbursement of these funds. Whether they should be disbursed by the disbursing officer of the Department of the Interior or by a special disbursing agent appointed by the Secretary of the Interior, in either case on vouchers properly certified by the superintendent of the hospital and approved by the Secretary of the Interior, is a question worthy of careful consideration. However this may be resolved, there can be no doubt that the superintendent should not be continued as the responsible disbursing agent, as well as the purchasing officer and the receiving officer.

Thereafter the first assistant physician, as heretofore stated, was designated as acting superintendent of the hospital, and the Comptroller of the Treasury, to whom the question was submitted, having decided that it would be practicable for the disbursing officer of this Department to disburse all funds for the hospital until such time as a superintendent and responsible disbursing officer should be appointed, I directed the disbursing officer of this Department to take charge of all financial matters connected with the Government Hospital for the Insane and to disburse all moneys for that institution. This duty he most satisfactorily performed up to October 1, 1903, when Doctor White qualified under his appointment as superintendent and disbursing officer of the Government Hospital for the Insane, thus clearly demonstrating the entire practicability of the handling and disbursement by the disbursing officer of the Department of all moneys appropriated for the maintenance, improvement, and protection of the Government Hospital for the Insane.

I have therefore to recommend that the following paragraph be inserted in that portion of the sundry civil bill wherein provision is made for the Government Hospital for the Insane, to wit:

And hereafter all appropriations made for or on account of the Government Hospital for the Insane shall be disbursed by the disbursing clerk of the Department of the Interior in the same manner and form as all other disbursements made by him of appropriations for the several bureaus and officers of the Department of the Interior on vouchers certified by the superintendent of the Government Hospital for the Insane, duly approved by the Secretary of the Interior.

In estimates of appropriations for this institution for the ensuing fiscal year, which have been transmitted to Congress through the honorable the Secretary of the Treasury, I have called special attention to this matter and have embodied therein the amendment to existing law suggested above.

Freedmen's Hospital.

The Freedmen's Hospital was appropriated for and placed under control of the Secretary of War by act of March 3, 1871 (16 Stat. L., 506), and transferred to the Department of the Interior by act of June 23, 1874 (18 Stat. L., 223). The supervision and control of expenditure of appropriations was transferred to the Commissioners of the District of Columbia by act of March 3, 1893 (27 Stat. L., 551). The appointive and general administrative power, however, is still vested in the Secretary of the Interior.

The report of the surgeon in chief of the hospital, W. A. Warfield, shows that the demands upon the hospital during the past year have largely increased. A greater number of patients have received treatment in the hospital than in any previous year. The whole number of patients in the hospital during the year was 3,224, of which number 3,106 were admitted, including 199 born in the hospital. One hundred and eighteen were remaining in the hospital June 30, 1903. During the year 3,110 were discharged, leaving 114 in the hospital July 1, 1904.

The number treated in the out-patient department was 6,081, a decrease of 178 as compared with the number treated last year. In this department 8,054 prescriptions were compounded.

The total number of patients treated in the hospital and dispensary attached was 9,305, divided as follows: 333 white males, 80 white females, 4,456 colored males, and 4,326 colored females.

In the surgical department 484 operations were performed. In 352 cases the patients recovered, in 109 improved, and in 7 the patients were not improved. Sixteen deaths occurred in this department. Of this number 11 were due to causes other than for which the patients were operated upon.

There were 1,980 examinations made in the pathological department, and 40 post-mortems were performed.

The number of moribund cases applying for admission continues very high; 35 were received in this condition, of which number 19 died within twenty-four hours and 16 within forty-eight hours after admission. The percentage of mortality for the year was 6.11 per cent of the cases under care, as against 7.38 per cent the previous year. The record of mortality is the lowest for the past ten years.

Of the 3,224 admitted to the hospital, 760 were nonresidents of the District of Columbia, which represents an increase of 352 over last year.

The rules governing admission to the hospital are as follows, to wit:

(1) Indigent residents of the District of Columbia who, being sick or injured and requiring medical or surgical attention, are without the necessary means to pay for the same.

(2) Transient population of said District who, while passing through or temporarily domiciled therein, fall ill or suffer accident or injury and require immediate medical or surgical care and attention, but are destitute of means to pay for the same.

(3) Such other destitute persons residing outside the District of Columbia as the Secretary of the Interior, either for humane reasons or in the interest of medical science, shall cause to be admitted.

(4) All emergency cases, which are defined as cases of sudden illness or injury, where to delay treatment would unduly imperil the life or safety of the patient.

In regard to nonresidents admitted to the hospital, the surgeon in chief states:

They are not the aged and infirm, chronics and incurables, seeking an asylum to remain until death, but they constitute those who suffer from some acute and curable disease, and when discharged from the hospital, in most instances, return to the communities from which they came. They come here because of a lack of hospital privileges for colored people in many of the towns throughout the country. They feel further encouraged to seek the benefits of this institution, knowing that no distinction is made between patients of different races—that equal privileges are extended to all who are received for treatment. Moreover, this hospital is generally known throughout the country as national in character, which also serves as an inducement for many a nonresident to apply for treatment.

The training school for nurses has made some advance over the previous year. The school alumnæ was admitted to full membership in the Nurses' Associated Alumnæ of the United States. The training school was registered in the State of New York under the laws regulating the State educational department, so that nurses holding diplomas from this school can register and practice their profession in the State of New York without the necessity of an examination. One hundred and fifty-four applications were received during the year for admission to the school; 16 were accepted; 12 nurses graduated in May, 1904. The appendix contains interesting information regarding the requirements exacted of the candidates desiring to enter the course of training and the work accomplished.

In the sundry civil act, approved March 3, 1903 (32 Stats. L., 1113), appropriation was made for the construction of a new Freedmen's Hospital building and accessories, and the trustees of Howard University were required to supply all medical and surgical service at the hospital without cost to the United States or the District of Columbia. In the sundry civil act of April 28, 1904 (33 Stat. L., 488), provision was made for the erection of the new hospital building on the square north of the present hospital site. This tract contains about 11 acres, with a gradually sloping hill studded with magnificent oak, and is a most desirable site for an institution of this character. The great care and strenuous efforts, the surgeon in chief states, required to keep the present buildings in a habitable condition seem less laborious now that the new hospital is an assured fact. In the act of Congress approved March 3, 1903 (32 Stat. L., 977-8), making appropriations for the expenses of the District of Columbia, and for other purposes, during

the fiscal year ended June 30, 1904, the sum of $54,000 was appropriated for the management of this hospital, one half of which, under existing laws, is payable from the funds of the District of Columbia, the other half being paid by the United States.

The dual control of this hospital still continues, the supervision of the expenditure of moneys appropriated by Congress for its management being under the Commissioners of the District of Columbia, and the appointive and chief administrative supervision of the institution being vested in the Secretary of the Interior. As heretofore indicated, more satisfactory administrative results would be secured by unification of the supervisory authority over the hospital, both fiscal and administrative.

In discussing the future needs of the hospital and the necessity for legislation more fully defining its status, the surgeon in chief states:

> There is no denying the fact that, as national, this hospital stands for more good and usefulness than it would if limited to the care of local patients exclusively. I am firmly of the opinion that it should stand for both. It should stand for the relief of human suffering from any part of the country, thus meeting the demands of a class of people whose presence in great numbers is not desired in other hospitals. This would logically place it, both fiscal and administrative, under the management of the General Government, as urged in my last annual report. Another year of divided jurisdiction only adds to the urgency then expressed. To relieve this situation it is hoped that Congress will amend existing law in accord with the recommendation contained in your last annual report, to wit, "that the whole maintenance of Freedmen's Hospital be borne by the United States, and that the Commissioners of the District of Columbia be authorized to enter into a contract with the Secretary of the Interior for the care, at such rate per capita as may be determined upon, of all persons from the District admitted to the hospital for treatment."

I renew the recommendations regarding this institution made in prior annual reports, and have to urge the early and favorable consideration by Congress of House bill 11284 and Senate bill 3193 relative to this hospital, now pending, which if enacted will effectuate such recommendations.

Howard University.

Howard University was established by the act of March 2, 1867, "for the education of youth in the liberal arts and sciences." It is managed by a board of trustees, on which Congress is represented by one Senator and two Representatives, and is supported in part by funds from benevolent societies and in part from appropriations by Congress. No tuition is required, except in the medical department, where the rate is $80 a year, and in the law department there is a matriculation fee of $10. There being no appropriation therefor, students in all departments have to provide their own text-books.

The report of the president, Rev. John Gordon, D. D., states that having been elected president of the university at the annual meeting

of the board of trustees of the university on May 27, 1903, he entered upon his duties the 15th of September of that year.

The number of students in attendance during the year aggregated 831, and were from 40 States and Territories, from Porto Rico, and from the following foreign countries: Africa; Barbados, British West Indies; Bermuda, British West Indies; British Guiana; Cuba; Demerara, British West Indies; England; Jamaica, British West Indies; Japan; Liberia; Macedonia; Natal, South Africa; St. Kitts, British West Indies; Trinidad, British West Indies; and West Central Africa. Of these, 137 graduated from the several departments.

There are seven practical working departments connected with the university: The college of arts and sciences, where the students are classified as in other American colleges, in which 47 students were entered during the year; the teachers' college, for the study of educational science and the training of teachers, 90 students; the commercial department, which is designed to fit students for intelligent citizenship and practical business, 60 students.

In the medical department, which includes dental and pharmaceutical courses, 235 students were enrolled during the year. During the last Congress appropriation was made for a hospital of 200 beds for this department.

In the theological department, which receives no aid from Congress, 79 students were entered. The attendance has been larger than ever before. Various denominations are represented among the students and teachers and all work in harmony.

In the law department, where the branches taught are the same as in other law schools in the city of Washington, 89 students were entered during the year.

The preparatory department, which fits students for college, is divided into four classes, each representing one year's study. There were 230 students in attendance in this department during the year.

There has been organized a summer school for teachers, the first session to be from July 1 to 29 of this year. The correspondence developed, and applications for enrollment received, indicates great interest in the school, and that it will be helpful to teachers of Maryland, Delaware, Virginia, and West Virginia.

In discussing the needs of the institution, the president of the university states:

Additional money is urgently needed to enlarge the teaching force and to adequately compensate teachers of experience and of proved merit. With better facilities Howard University can do a far greater work for the colored people of our land than even that already accomplished, which has given it wide renown and earned merited public confidence. The heating and lighting arrangements of the various buildings are inadequate and have been condemned by the building inspector of the District of Columbia. He has recommended that a central steam-heating and

electric-lighting plant be erected. In the interests of economy of administration and security to life and property, the university is in the most urgent need of such a plant, and it is respectfully requested that Congress be recommended to make provision, at its coming session, for the erection of a steam-heating and electric-lighting plant for the university.

In the bill making appropriation for the sundry civil expenses of the Government for the fiscal year ending June 30, 1904, and for other purposes, approved March 3, 1903, provision is made, under the head of the Department of the Interior, for Freedmen's Hospital, in the following terms, to wit:

FREEDMEN'S HOSPITAL: For the construction of a new Freedmen's Hospital building and accessories on the ground now occupied by the Freedmen's Hospital, fifty thousand dollars, said buildings to be constructed upon plans to be approved by the Supervising Architect of the Treasury and the Superintendent of the Capitol Building and Grounds, and sufficient when completed to provide for not less than two hundred patients; and the Secretary of the Interior is authorized to enter into a contract or contracts for the construction of said buildings at a cost not exceeding three hundred thousand dollars, which sum, including the amount herein appropriated, shall be paid one-half out of the Treasury of the United States and one-half out of the revenues of the District of Columbia: *Provided*, That before any portion of the sum herein appropriated shall be expended the proper authorities owning the ground upon which said buildings are to be erected shall lease the same to the Government of the United States at an annual rental of one dollar per annum during the period of their occupation of the same: *Provided further*, That the trustees of Howard University shall be required to supply all medical and surgical service without cost to the United States or the District of Columbia.

Howard University having formally accepted the provisions of the foregoing statute, a survey was made of the land in the vicinity of Freedmen's Hospital owned by the university, with a view to the selection of such portion thereof as would be suitable as a site on which to construct a hospital building. As a result thereof it was determined that it would be necessary to use the entire tract of land then leased from the Commissioners of the District of Columbia for purposes of the hospital, but as the Howard University was unable to convey a perfect title to the entire parcel of land desired, no lease thereof was made and, as set forth in my last annual report, the circumstances of the case were called to the attention of Congress with a view to the selection of another site on which to construct a hospital. Accordingly, in the sundry civil appropriation bill approved April 28, 1904, provision was made for the leasing of a new site on which to construct the new hospital for freedmen in the following terms:

FREEDMEN'S HOSPITAL: The appropriation of fifty thousand dollars made by the sundry civil appropriation act for the fiscal year nineteen hundred and four is hereby continued for the fiscal year nineteen hundred and five: *Provided*, That the tract of land lying and being between Sixth and Fourth streets and between Pomeroy and College streets, in the city of Washington, District of Columbia, containing approximately eleven acres of ground, be, and the same is hereby, retroceded to Howard

University upon the condition that the said Howard University shall make and execute to the United States a perpetual lease for the nominal rental of one dollar per annum, and that upon the execution of such lease to the satisfaction of the Secretary of the Interior, said Secretary shall cause to be erected on the ground so retroceded and leased the new hospital for freedmen provided for by the act above referred to.

Under date of June 7, 1904, the Howard University, a corporation organized pursuant to the act of Congress approved March 2, 1867, entitled, "An act to incorporate the Howard University in the District of Columbia," by an instrument in writing entered into between the Secretary of the Interior and the proper officers of that institution, leased the tract of land described in the act of April 28, 1904, supra, forever. A copy of this contract is hereto appended, pages 317–319, Exhibit I.

Upon consideration of the matter the conclusion was reached that it would be to the interest of the service to secure plans for the new hospital building through the medium of an architectural competition, and on the 30th of August, 1904, a circular letter was addressed to twenty-five architects located in Washington, D. C., Baltimore, Md., Philadelphia, Pa., New York City, N. Y., Albany, N. Y., Boston, Mass., Columbus, Ohio, and St. Louis, Mo., inviting them, under stated conditions, to submit plans for the new hospital buildings to provide for not less than 200 patients, such plans to be delivered at the Department not later than 2 p. m., Thursday, December 1, 1904. The total amount to be expended in the construction of the new Freedmen's Hospital building and accessories was fixed at $275,000, which amount is to include architect fees and all necessary machinery and equipment for heating, lighting, water supply, and sewerage for the building.

The competitive plans, when received, will be judged by a committee consisting of the Secretary of the Interior, or his duly authorized representative, the Supervising Architect of the Treasury, the Superintendent of the Capitol Building and Grounds, one member of the board of trustees of Howard University, one member of the board of visitors of Freedmen's Hospital, the superintendent of the Government Hospital for the Insane, and the surgeon in chief of Freedmen's Hospital.

Columbia Institution for the Deaf and Dumb.

The report of Dr. E. M. Gallaudet, president of the Columbia Institution for the Deaf and Dumb, made pursuant to the requirements of the act of February 16, 1857 (11 Stat. L., 161), shows that the pupils remaining in the institution July 1, 1903, numbered 107; admitted during the year, 52; since admitted, 40; total, 198. Of these, 127 have been in the college department, representing 34 States, the District of

Columbia, Canada, and Ireland, and 71 in the primary department. Of these, 50 were admitted as beneficiaries from the District of Columbia, and 91 have been admitted to the collegiate department under the provisions of the acts of Congress approved August 30, 1890, and June 6, 1900.

General good health has prevailed among the students and pupils during the year.

The courses of study in the several departments of the institution are continued as heretofore, some additional prominence being given to technical instruction in the college. Promising young men are encouraged to pursue scientific courses. Three young men graduated in the scientific course last June, one of whom has secured a position as assistant chemist in the Department of Commerce and Labor. Another young man who graduated two years ago as a bachelor of science in engineering is now employed in surveying Government lands in Utah.

In addition to the courses already offered, a new course in technical work consisting of instruction in graphical methods and general engineering will be given to the men of the present senior class. Courses of lectures will be given on the various kinds of engines and motors and on the general applications of electricity. The engineering features of some of the greatest national and international projects now in operation or in process of construction will also be considered.

The fortieth public anniversary of the college was held in May. Among the interesting features of the programme were the presentation of the Samuel Porter memorial, an historical address by the president of the college, the conferring of honorary degrees on a number of graduates of the college who have attained prominence in science and in letters, and the address of the orator of the day, President Gilman, of the Carnegie Institution.

Sixteen young men and women were graduated in June with the bachelor's degree, having pursued the regular courses leading thereto in art, science, and philosophy. Three other young men were awarded the degree of master of arts, having studied in course therefor. There were four graduates from the normal class.

The total receipts of the institution from all sources amounted to $108,694.41, of which $73,500 was appropriated by Congress for general support and special repairs and $30,000 for additional buildings, and $5,194.41 was received for board, tuition, etc.

The expenditures were $75,558.13 for current expenses, $3,000 for special repairs, and $27,289.32 for new buildings.

The estimates for the fiscal year ending June 30, 1906, are:

For the support of the institution, including salaries and incidental expenses, for books and illustrative apparatus, and for general repairs and improvements, $73,000.

For repairs to the buildings of the institution, including plumbing and steam fitting, and for repairs to pavements within the grounds, $3,000.

For additions to the buildings of the institution, to furnish additional accommodations for pupils, and to provide for the heating of the buildings from a central plant and for lighting the buildings by electricity, $30,000.

An estimate of $2,500 is also submitted as a deficiency for the current fiscal year, this having arisen in consequence of the severity of the past winter and the increased cost of provisions.

Maryland School for the Blind.

Under section 2 of the act of Congress approved May 29, 1858 (11 Stat. L., 294), the Secretary of the Interior is authorized to place for instruction in an institution for the blind, in the State of Maryland or some other State, the indigent blind children of teachable age who are children of persons actually engaged in the military and naval service of the United States, and under section 4869 of the Revised Statutes the indigent blind children of teachable age belonging to the District of Columbia.

The report of Dr. F. D. Morrison, superintendent of the institution, shows that in pursuance of this authority there were at the close of the fiscal year 1903, 29 blind children under instruction in the Maryland School for the Blind at Baltimore, Md. Since that time 4 pupils have been admitted, 2 have withdrawn, and 1 is absent on account of ill health, leaving 31 beneficiaries in the institution on the 30th of June, 1904. The pupils under instruction are making satisfactory progress. A number of them are above the average, and several deserve special mention.

The branches taught embrace all the studies of the public schools from the kindergarten to and including the grammar school grade, and in addition thorough instruction in music (instrumental, theory, and voice culture), piano-tuning, broom and mattress making, sewing (plain and machine), knitting, crocheting, and various kinds of fancy work. Special attention is paid to the physical development of the pupils.

The school is furnished with all that is necessary for the proper training of blind children: Books, apparatus, musical instruments, typewriters, sewing machines, comfortable buildings, ample grounds, and experienced and competent teachers. The course of training is designed to give the pupils a practical English education.

The total amount expended during the year for the care and maintenance of indigent blind children of the District of Columbia was $9,068.75, half of which amount is paid from the revenues of the Dis-

trict of Columbia and the other half out of the Treasury of the United States, pursuant to the act of Congress approved March 3, 1899 (30 Stat. L., 1101). The total amount expended during the fiscal year ended June 30, 1903, was $8,237.49.

Washington Hospital for Foundlings.

The act of April 22, 1870 (10 Stat. L., 92), placed this institution under the care of a corporation, to carry into effect that provision in the last will and testament of Joshua Pierce, devising to certain trustees 14 parcels of land in the city of Washington, D. C., to be held as a site for a hospital for the reception and care of destitute and friendless children. It is specifically provided by the act that foundlings received by this hospital shall be deemed and considered wholly under the guardianship, care, and control of said institution, to be educated, apprenticed, or otherwise disposed of in such manner as the directors of said hospital may, in their judgment, deem for the best interests of said children, until they shall attain the age of 18 years, when said care and control shall cease. The institution is managed by a board of directors, who are required to report annually to the Secretary of the Interior, and is maintained in part by contributions from benevolent persons and societies and in part by Federal appropriations.

The report of the board of directors shows that 97 children were provided for during the fiscal year ended June 30, 1904, of which number 46 were remaining in the institution from the previous year.

There were 18 adoptions during the year and 36 deaths recorded. Of the latter, 29 were under 6 months of age, 5 were under 9 months, 1 under 1 year, and 1 over 1 year, leaving 43 remaining at the hospital at the end of the fiscal year 1904.

Including a balance of $306.18 from last year, the total receipts from all sources were $11,093.51, of which amount $10,733.62 was expended in the operations of the institution, leaving a cash balance on June 30, 1904, of $359.89.

The daily average of children is about 40. Since the hospital was opened in 1887 there have been 229 little ones adopted into happy homes, where they will be trained to become useful men and women. This is considered the best and most satisfactory work of the institution.

Owing to lack of funds the board is again compelled to ask a continuance of the annual appropriation of $6,000 in order to carry on the work of the institution.

I most heartily approve of this charity and recommend that Congress appropriate the funds desired, that the work of the hospital may be properly continued.

THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

The Superintendent of the United States Capitol Building and Grounds, Elliott Woods, in his annual report of the operations of his office, sets forth the important repairs and improvements made in the Capitol building and grounds, together with details relating to other work under his supervision.

The very liberal appropriations for the work of repairs to the Capitol building and grounds provided in the sundry civil bill approved March 3, 1903, which were made immediately available, enabled the Superintendent to at once take up and prosecute a number of needed improvements in the interior of the building prior to the usual time in July of 1903, which have been prosecuted to completion during the past year. In addition a large number of permanent minor repairs were made, many of which are usually called for during the session of Congress and pertain to the domestic life of the building.

The total number of items of repairs, which are enumerated in detail in an appendix attached to the report, was 1,453, of which 251 were important and 1,202 repairs of a minor character. The total area covered by painting was, approximately, 75,000 square yards, including nearly every corridor in the building, the painting and decorating of 29 rooms, the completion and decoration of the Senate and the House lobbies. The ironwork between the outer and inner shell of the Dome, as well as of the exposed surface of the ironwork on the skirt of the Dome and the old building wall supporting it, has been thoroughly painted, and new marble floors laid in the Senate and House lobbies. An extensive system of shelving was installed for the House library and its storage rooms in the basement. High-grade steel shelf and file-case work was also provided in the Senate library under the central roof.

A circular stairway was erected as a continuation of the old stairway located in the southeast corner of the old library space for access to the House Document Room and two committee rooms, one for the Senate and the other for the House, were provided in the third story of the old library space. The fireproofing of the roof lanterns at the north and south of the Dome was fully completed, and the Senate barber shop on the basement floor was completely reconstructed and provided with new fixtures, plumbing, bathing, etc. The mechanical equipment of the building has been augmented by the installation of five forged steel water-tube boilers, aggregating 1,160 horsepower in capacity. The conduct of the heating, lighting, and ventilating plant during the year has been satisfactory, both as to the personnel em-

ployed in its operation and the results obtained. Referring to experiences incident to the fire and explosion of 1898, important steps have been taken toward the prevention of fires in the building.

In relation to the preventing of accidents in the elevator service of the building, the superintendent states that—

> In general, accidents to elevators will happen notwithstanding the best precautions taken, and I would like to make it a matter of record in behalf of the employees under the direction of this office that the inspection of our elevator service is very complete. For this purpose a card system has been in operation during the past year, something after the following fashion: On each morning two accredited engineers of each wing of the Capitol make a thorough inspection of the machinery. One of these engineers takes up a position at the overhead machinery, and while the operator slowly moves the car up and down the engineer passes the cables through his hands. By this means he is able to detect even a single strand of broken wire, and if such is found that elevator is immediately thrown out of service and remains so until a new cable is put in place. It would seem, therefore, that if an accident to any one of the elevators should happen it would occur despite our every precaution. This inspection is made on every elevator and its machinery daily during the session of Congress and once a week during recess and includes the inspection of the cleanliness of car and machinery and competency of the safety devices installed on the car. After the inspection the person making the same writes his report on the card, signs his name to it, passes it through the hands of the chief engineer, who, if he has no recommendations to make, forwards the card approved to this office, where it is placed on record.

The condition of the Capitol grounds for the past year is reported as exceptionally good, owing to the preliminary treatment given to the lawns during the past two or three years; the large lawn east of the building has been completely overhauled and replanted, and during the past season has shown a sturdy growth of new grass. The usual repairs to paving, walks, and drives have been made, trees and shrubbery planted where needed, or pruned in the proper season; the lamp-posts and shelter houses in the grounds painted, coping walls around the grounds pointed up and when necessary restored, and all required repairs made to hydrants, water pipes, and fountains.

Through special arrangements with the officer in charge of public buildings and grounds, the public gardens now supply trees, plants, and shrubbery for the ornamentation of the Capitol and Library grounds. Extensive improvements have been made to Engine House No. 3, near the Capitol grounds, and special repairs have been made to the Senate and House stables. At the United States Botanic Gardens necessary additions and repairs have been made to the main conservatory, the plant houses, the packing room, and the office building on Maryland avenue. At the United States court-house many important changes and repairs have been made, adding much to the appearance of the building and to the comfort of those occupying the same.

A supplemental report will be made by the Superintendent in relation to the construction of a building for the House of Representatives

upon square 690, bounded as follows: On the east by First street SE., on the south by C street SE., on the west by New Jersey avenue SE., and on the north by B street SE., for the acquirement of which site provision was made in the sundry civil act of March 3, 1903 (32 Stat. L., 1113), and to which very full reference was made in my last annual report.

The expenditures for the fiscal year ended June 30, 1904, were as follows: Annual repairs of the Capitol, $295,950; lighting the Capitol grounds, etc., $42,500; improving the Capitol grounds, $25,000; repairs to engine house, Senate and House stables, $2,250; repairs to the court-house of District of Columbia, $5,000; flags for central Capitol building, $100.

By the sundry civil act of April 28, 1904, a commission was appointed with a view to the acquirement of a site for and to direct and supervise the construction of an office building for the United States Senate in the following terms, to wit:

To acquire a site for and toward the construction of a fireproof building for committee rooms, folding rooms, and other offices for the United States Senate and for necessary office rooms for Senators, to be erected on square numbered six hundred and eighty-six, in the city of Washington, District of Columbia, bounded by B street northeast, First street northeast, C street northeast, and Delaware avenue northeast, seven hundred and fifty thousand dollars, and said site shall be acquired and said building constructed under the direction and supervision of a commission, which is hereby created, to be composed of three Senators, namely: Honorable Shelby M. Cullom, of Illinois; Honorable Jacob H. Gallinger, of New Hampshire; and Honorable Francis M. Cockrell, of Missouri, and said building shall be constructed in accordance with architectural plans to be secured by said commission in such way as they may deem advisable. The cost of said building, exclusive of site, shall not exceed two million two hundred and fifty thousand dollars; the construction thereof and letting of contracts therefor, including employment of skilled and other services, shall be under the control of the Superintendent of the Capitol Building and Grounds, subject to the direction and supervision of said commission. The said commission may acquire said site or any portion thereof by direct purchase, if the prices are reasonable; such portion of said site as can not be so purchased shall be acquired by condemnation, as follows: The said commission shall notify the Secretary of the Interior in writing of such failure, whereupon the said Secretary of the Interior shall, within thirty days after the receipt of said notice, proceed to acquire such portion of said site in the manner prescribed for providing a site for an addition to the Government Printing Office in so much of the act approved July first, eighteen hundred and ninety-eight, as is set forth on pages six hundred and forty-eight and six hundred and forty-nine of volume thirty of the Statutes at Large, and for the purpose of such acquisition the Secretary of the Interior shall have and exercise all powers conferred upon the Public Printer in said act.

The appropriations herein and hereafter made for said site and building may be used for the payment of necessary expenses not compensation or salaries of the commission hereinafter provided for, and shall be disbursed by the Secretary of the Interior.

Any vacancy occurring by resignation or otherwise in the membership of the said commission shall be filled by the presiding officer of the Senate.

On May 24, 1904, Hon. S. M. Cullom and Hon. F. M. Cockrell, a majority of the commission created by said act, advised the Department that, pursuant to the provisions of the statute, they had endeavored to acquire said site by direct purchase from the owners thereof but had been unable to secure the same or any part thereof at reasonable prices, and requested the Secretary of the Interior to proceed without delay to acquire said site, namely, square 686, in the city of Washington, District of Columbia, bounded by B street, NE., First street, NE., C street, NE., and Delaware avenue, NE., by condemnation proceedings as provided in the act of April 28, 1904, supra. Accordingly, on May 26, 1904, the Honorable the Attorney General was advised of the action taken by the commission designated in the act of April 28, 1904, and requested to cause application to be made to the Supreme Court of the District of Columbia pursuant to the provisions of the act of July 1, 1898, which was provided for in said act of April 28, 1904, for the institution of proceedings looking to the condemnation of the above-described square, 686, in the city of Washington.

Subsequently proceedings for such purpose were instituted by the United States attorney for the District of Columbia by action No. 624 in the supreme court of the District of Columbia in special term as a district court of the United States for condemnation of the site in question, and a commission, consisting of Messrs. Robert I. Fleming, James F. Oyster, and H. Rozier Dulany, were thereupon appointed by the court to hear testimony concerning the value of the different lots on said square and the improvements thereon, who afterwards submitted their report to the court, awarding $746,111 in payment for the land damages. On October 20, 1904, the Department was advised of the result of the inquiry on the part of the commissioners appointed by the court, together with a copy of their report, and subsequently upon the request of the Department it was furnished with the testimony and plats of the lots in square 686 used by said officers in arriving at their conclusion. The Honorable Attorney-General under date of November 22, 1904, was advised that the values of the several pieces or parcels of land in said square, as determined by the commissioners appointed by the supreme court of the District of Columbia, were reasonable, and inclosed therewith, for presentment to such court, the following statement:

I, Ethan Allen Hitchcock, Secretary of the Interior, having examined the report of the commissioners appointed in the above-entitled cause to appraise the values of the several pieces or parcels of land, and the improvements thereon, to be acquired under the provisions of the act of April 28, 1904 (33 Stat. L., 481), as a site for the construction of a fireproof building for committee rooms, folding rooms, and other offices of the United States Senate and for necessary office rooms for Senators, and the appraisement of said values as returned by said commissioners to the court, do certify that, in my judgment, said appraisement is reasonable.

The commission designated in the act of April 28, 1904, to select a site for and supervise the construction of a building for the United States Senate, appointed Mr. John M. Carrere, of New York City, N. Y., as consulting architect in connection with the construction of said Senate building, and on the 12th of May, 1904, contract was entered into with him for the rendition, upon the terms therein set forth, of services as consulting architect.

GEORGE WASHINGTON UNIVERSITY.

Section 3 of an act entitled "An act supplemental to the act of February 9, 1821, incorporating the Columbian College in the District of Columbia, and the acts amendatory thereof," approved January 23, 1904, provides:

SEC. 3. That power is hereby given to the board of trustees of said university to change the name of said university at any regular meeting by a vote of not less than two-thirds of the total number of members of the board, as prescribed by the charter, subject to the approval of the Secretary of the Interior and the Commissioner of Education. That upon said action being taken a certificate, under the seal of the university, stating the name adopted and the date when the name shall go into effect not less than thirty days nor more than six months from the date of its adoption, together with the fact that said name has been adopted as herein prescribed, shall be filed in the office of the recorder of deeds of the District of Columbia, and thereupon, upon the date specified for the name to go into effect, the university shall be known and designated by the name adopted, and by said new name the said university shall be vested with and convey its real estate, hold, control, and administer endowments and gifts of money and property heretofore and hereafter made for the maintenance of its educational work and do and perform all acts which it now has the power to do under its said charter. Such change of name shall not in any other way change, affect, or modify in any degree the rights, privileges, obligations, and powers of the said university under the charter of February ninth, eighteen hundred and twenty-one, and the amendatory acts thereto.

Pursuant to the provisions of the above-cited act, on June 9, 1904, the president of the Columbian University made application for the approval of the Secretary of the Interior and the Commissioner of Education of the action of the board of trustees in changing the name of that institution to the George Washington University, and subsequently upon request there was filed a certified copy of the minutes of the meeting of the board of trustees.

A protest against the approval of the action of the board of trustees was received, but after a careful consideration of all the circumstances as presented, the conclusion was reached that such protest was without merit, and thereafter, on June 20, 1904, the following certificate in words and figures, signed by the Secretary of the Interior and the Commissioner of Education, was issued:

Whereas by act of Congress approved January 23, 1904, the Columbian University was authorized to change its name, subject to the approval of the Secretary of the Interior and the Commissioner of Education;

And whereas it has been made satisfactorily to appear to us that, at the regular meeting of the board of trustees of said university, held on the eighth day of June, A. D. 1904, at which meeting there were present more then two-thirds of the total number of members of said board, it was unanimously resolved to change the name of said university to that of The George Washington University, the same to go into effect on the first day of September, A. D. 1904:

Now, therefore, this is to witness that, pursuant to said act of Congress, we do hereby, this twentieth day of June, A. D. 1904, approve said change of name.

WASHINGTON AND GEORGETOWN RAILWAY COMPANY.

By section 3 of an act approved May 17, 1862 (12 Stat. L., 389), entitled "An act to incorporate the Washington and Georgetown Railroad Company," it is provided that said railway company shall lay upon the the line of its road rails of the most approved pattern, to be determined by the Secretary of the Interior. Pursuant to the requirements of the statute said company has from time to time submitted samples of rails proposed to be used by it, and such samples have been examined and approved by the Department. By the act of March 1, 1895 (28 Stat. L., 700), authorizing the Rock Creek Railway Company (now the Capital Traction Company) to lease or purchase connecting and intersecting lines of street railway in the District of Columbia, it was expressly provided that no railway company taking advantage of the act should be thereby released from any obligation or restriction imposed by its original charter, or any law of Congress subsequently enacted.

Inasmuch as the Washington and Georgetown Railroad Company, or its successor, the Capital Traction Company, has no connection whatever with this Department other than as stated above, I have the honor to recommend that so much of the law as requires the Secretary of the Interior to approve the form of rails proposed to be laid upon the line of road of said Washington and Georgetown Railroad Company be repealed, or that the act in question be so amended as to require the submission of such rails to the Commissioners of the District of Columbia, instead of to this Department, for approval.

COLUMBIA RAILWAY COMPANY, WASHINGTON, D. C.

Section 16 of the act of Congress entitled "An act to incorporate the Columbia Railway Company of the District of Columbia," approved May 24, 1870 (16 Stat. L., 136), provides:

SEC. 16. *And be it further enacted*, That there shall be an annual meeting of the stockholders for choice of directors, to be holden at such time and place, under such conditions, and upon such notice as the said company in their by-laws may prescribe, and said directors shall annually make a report in writing of their doings to Congress, or to the Secretary of the Interior, and to the stockholders in general meeting.

The vice-president of the Washington Railway and Electric Company reports that under the provisions of the act of Congress approved June 6, 1900 (31 Stat. L., 270), entitled "An act relating to certain railway corporations owning and operating street railways in the District of Columbia," the Columbia Railway Company, by a deed on the 4th day of February, 1902, transferred all its property, rights, and franchises to the Washington Railway and Electric Company, and that the said Washington Railway and Electric Company has since that time operated the lines at one time owned and operated by the Columbia Railway Company; that the property of said company is operated jointly with other lines owned by the Washington Railway and Electric Company, and a report was submitted to Congress January 30, 1904 (H. Doc. 495), by the Washington Railway and Electric Company, which includes a report of the operation and management of the Columbia Railway Company for the calendar year ended December 31, 1903.

The vice-president further states that in making such report it is believed that the requirements of the statute under which the Columbia Railway Company was incorporated are complied with, and that in his opinion the Columbia Railway Company exists as a corporation to-day for the purpose of taking, if need be, the necessary steps to extinguish a bonded indebtedness which was on its property when conveyed to the Washington Railway and Electric Company. In view of this merger of interests, in connection with the fact that the Washington Railway and Electric Company reports directly to Congress as to the operation of all the lines owned and controlled by it, I have the honor to recommend that so much of the act of May 24, 1870, incorporating the Columbia Railway Company, as requires it to submit an annual report to the Secretary of the Interior be repealed.

THE WASHINGTON GASLIGHT COMPANY.

The act of Congress approved June 23, 1874, entitled "An act regulating gas works" (18 Stat. L., 277), after providing the rate to be paid for gas furnished by the Washington Gaslight Company in the District of Columbia, contains a clause as follows (sec. 11):

Provided, That when the price of gas coals delivered at the works of the Washington Gaslight Company shall advance to eight dollars and fifty cents per ton the price of gas to consumers may be advanced ten cents per thousand cubic feet and an additional ten cents per thousand feet for each additional dollar per ton that gas coals may advance in price, and in like manner a reduction of ten cents per thousand feet shall be made for each and every dollar per ton that gas coals may fall in price below seven dollars per ton. And for that purpose the Washington Gaslight Company shall in the month of May in each year furnish the Secretary of the Interior with a statement of all their coal contracts or purchases for the ensuing year excepting the Ritchie mineral and the Richmond coal, the cost of which shall not enter into any

calculation in making an average, which statement shall be sworn to before a justice of the peace by their engineer and secretary, and the advance or reduction of price shall take place on the first of July ensuing.

Pursuant to the provisions of the statute, John R. McLean, president of the Washington Gaslight Company, has submitted a statement giving the prices of the several kinds of coal at the works of the company, as follows: Gas coal alongside wharf West Station, Twenty-sixth and G streets NW., 30,000 tons at $3.20, 15 cents per ton discharging and handling. Barging from Eastern Branch, price not yet settled. Gas coal at East Station, Twelfth and M streets NE., 15,000 tons at $3.20, 15 cents per ton discharging and handling. Fifteen thousand tons hard white ash broken coal, delivered at West Station, at $4.70; discharging, etc., 15 cents per ton. The same coal delivered at East Station, 8,000 tons, at $4.85 per ton.

Section 2 of the act of June 23, 1874, supra, provided for the appointment of an inspector of gas and meters in the District of Columbia, at an annual salary of $2,000; and the first incumbent of that office was commissioned by the President February 27, 1875, such commission being upon the records of the Department of the Interior. Up to and including September 30, 1879, the inspector submitted to this Department annual reports showing the results of inspections made by him; but since that date it is understood that the inspector has reported to the Board of Commissioners of the District of Columbia.

The act of Congress approved June 11, 1878, entitled "An act providing a permanent form of government for the District of Columbia" (20 Stat. L., 102), while it does not expressly transfer jurisdiction over this officer from the Secretary of the Interior to the Commissioners of the District of Columbia, seems to have been regarded as having had that effect; and in the sundry civil appropriation act of June 20, 1878 (20 Stat. L., 209), it was provided as follows:

> All expenses heretofore incurred by the General Government for the board of health, for the metropolitan police, and for gas inspection, shall hereafter be a charge upon the government of the District of Columbia.

Prior to 1878 the appropriations for the salary of the inspector were made under the Treasury Department; since that date, however, they have been made under the District of Columbia. In the District of Columbia appropriation act of March 3, 1903 (32 Stat. L., 959), there is a clause as follows:

> Hereafter the inspector of gas and meters and assistant inspector of gas and meters of the District of Columbia shall be appointed by the Commissioners of the District of Columbia.

Inasmuch as the inspector is now appointed by the Commissioners of the District of Columbia, and as the Washington Gas-Light Company has no connection whatever with this Department other than to render

the report required by the section of the act above referred to, it is believed that the company should hereafter be required to report either direct to Congress, or to the Commissioners of the District of Columbia, instead of to this Department, and accordingly I have the honor to recommend the enactment of legislation having this end in view.

LOUISIANA PURCHASE EXPOSITION.

The act of March 3, 1901 (31 Stat. L., 1440), provides for celebrating the "one hundredth anniversary of the purchase of the Louisiana Territory by the United States by holding an international exhibition of arts, industries, manufactures, and the products of the soil, mine, forest, and sea, in the city of St. Louis, in the State of Missouri."

Of the appropriation for the Government exhibit $69,000 was allotted to this Department. The chief clerk of the Department, Edward M. Dawson, is the representative of the Secretary of the Interior on the board of management of the Government exhibit. Eleven thousand two hundred and seventeen square feet were assigned in the Government building for the use of this Department, its bureaus, and offices, and the exhibit installed and maintained therein was dignified and comprehensive and fully representative of the operations of the different bureaus and other branches of the Department and the administrative and other results attained.

An abstract of the report of the Department representative is hereto appended, pages 325–330, Exhibit O.

Special appropriations for independent exhibits at the fair were made as follows: Sixty-five thousand dollars for an Indian school exhibit, illustrating the progress of the Indians along educational lines; $25,000, an equal amount to be collected by the citizens of the Indian Territory, for the installation and maintenance of exhibits of industries of the Indian Territory, and $50,000 for the construction of a building and maintenance therein of an exhibit of industries of the District of Alaska.

The general supervision of the collection and installation of exhibits for the District of Alaska and the Indian Territory was assigned to Hon. Thomas Ryan, First Assistant Secretary of the Interior. Governor John G. Brady was commissioned as executive commissioner for the Alaska exhibit, F. C. Hubbard for the Indian Territory exhibit, and S. M. McCowan, superintendent of the Chilocco Indian School in Oklahoma, was designated as superintendent of the Indian exhibit, who, respectively, have had active charge of the exhibit work.

The Alaska Exhibit was displayed in a building erected for the purpose in accordance with plans and specifications prepared in Washington under the direction of the Department. The dimensions of the main building are 50 by 100 feet; it is two stories high,

designed after the colonial style of architecture, using the Greek Ionic motive for all details. On the east and the west of the building, connected therewith by sightly and suitable passageways, are two buildings constructed in the native style of architecture, patterned after the homes of the Hydah Indians, the material for the construction of which was obtained from buildings of this character in Alaska. Surrounding the entrance of each of the native buildings are a number of totem poles, twenty in all, which were gathered in various portions of Alaska through the efforts of the executive commissioner with the cooperation of the Revenue-Cutter Service. These grotesque relics of aboriginal superstition, now outgrown in Alaska, have proved of interest to ethnologists and likewise awakened great popular interest, attracting many people to the Alaska building who would not otherwise have visited it and inspected its exhibits.

The lower floor of the main building was devoted to the various interests and industries of the district, these being illustrated, among other things, by specimens of grasses, grains, and vegetables grown in the district, arranged in an attractive manner; the exhibit of the salmon packing industry also showed salmon eggs in the different stages of hatching; specimens of exceptionally fine marbles hitherto unknown in the American markets; tin ores mined in the vicinity of Cape Prince of Wales; copper ores from different sections of the district; coal, iron, and gold ores from various sections; a large collection of gold nuggets; samples of almost pure copper and specimens of graphite and jade; an excellent display of guano and fish oil, crude petroleum, refined oil and its by-products; a large collection of Alaskan furs, including those of the Polar bear, black and brown bears, red and silver foxes, seals, otter, and others; an ethnological exhibit showing many articles and curios illustrative of the manner of living and needs of the natives, together with specimens of their skill in carving ivory and in making baskets; a number of stuffed animals and birds from the district are displayed, and from time to time there are added to the exhibit varieties of fresh vegetables, berries, and flowers grown principally in southeastern Alaska equaling in quality those grown in the most fertile region.

The excellent growth of these products, it is stated, is due to the Japan currents, which modify the temperature of southeast Alaska, rendering it more mild than other regions in the same latitude. Occupying a prominent position in the building is a large relief map of Alaska, which has been eagerly scanned by visitors. It shows, among other things, the ocean bottoms, as well as the land areas, distinction being made between the tundras and barren lands, lightly and heavily wooded lands, areas covered with perpetual snow and ice, rivers, valleys, and the distribution of metals and minerals throughout the district. The main stairway of the building was constructed of Alaskan

cedar, and in the large windows at the head of the staircase are fixed fine-colored transparencies of scenes in the district. These, together with 24 black-and-white transparencies displayed in the passageways connecting the main building with the native buildings, are greatly admired and form a valuable feature of the exhibit.

Upon the second floor of the building were located the art and public school exhibits, the latter being mainly from the cities of Sitka, Juneau, and Skagway. In the parlors and reception hall, which were commodious and artistically furnished, there were displayed a large number of paintings and photographs of Alaskan scenery of particular interest to Alaskans.

A very significant exhibit is one loaned by the Treadwell Mining Company of Alaska, consisting of a gilded cube equal in value to the sum paid for Alaska by the United States, and beside it a gilded pyramid showing the output of that mine, which amounts to three times the purchase price of the Territory.

The executive commissioner is of opinion that the Alaska exhibit is accomplishing all that Congress contemplated in making provision therefor, that its educational influence will be far reaching and permanent, contributing to the more rapid development of Alaska in the near future. The merit of the exhibits is further attested by the awarding of 38 prizes by the jury of awards for the exhibits shown in the Alaska building.

The Indian Territory Exhibit was provided for in a building constructed under specially prepared plans; the work was fully completed and the exhibit installed on the opening of the exposition, April 1, 1904. The building, which was located on a most eligible site in the Plateau of States, near the southeast entrance to the grounds, was a two-story colonial structure, 109 by 72 feet. The first floor contains, besides the large lobby, two exhibit rooms; in one of these was displayed the art and educational exhibit; in the other the photographic exhibit. These two exhibits—one setting forth the artistic, the other the commercial development of the residents of the Indian Territory—went far toward dispelling the somewhat prevalent idea that the Indian Territory is a "wilderness," where progress and civilization are unknown.

In the art and educational room were displayed many beautiful paintings, studies, laces, fine needle and bead work, and industrial work—all the product of Indian Territory students and residents. In the photographic room were arranged 500 large photographs, suitably framed and mounted, taken from all parts of the Territory and representing the actual status and present commercial conditions in the Indian Territory.

In the main lobby, on the first floor, was displayed the painting of Thomas Jefferson and his family, the work of Mrs. Narcissa Owen, a

Cherokee woman, a member of the Cherokee Nation, as well as tapestries by the same artist. There were also shown 100 wild flowers of the Territory, mounted and framed, together with a valuable collection of old Indian pottery, etc.; many of the latter articles being more than one hundred years old and representing the highest type of work of the old Indians.

The second floor of the building contained a large reception hall, ladies' parlors and resting rooms, and the offices of the executive commissioner. An especially attractive feature about the Territory pavilion was the spacious stair landing and the five large windows containing two transparencies in each representing typical scenes from the Territory.

The Indian Territory was also represented in three of the exhibit palaces of the exposition, maintaining booths in the Palace of Mines and Metallurgy, the Palace of Horticulture, and the Palace of Agriculture.

The coal fields of the Indian Territory, especially in the Choctaw Nation, have for years been operated successfully, and within the past two years the development of the coal industry has been immense. Petroleum is also found in many parts of the Indian Territory. This industry, though new, is developing into gigantic proportions. Hundreds of wells are going down in both the Bartlesville and Muskogee fields, and the majority of those already brought in are good producers. In the Indian Territory booth in the Mines and Metallurgy Building were shown many samples of coals and oils found in the Territory. Besides the four large cubes of the four separate grades of bituminous coal there were displayed cases of the finest samples of egg coal, nut coal, and pea coal, and pyramids of coal and coke. Samples of the oil from twenty-seven flowing wells, together with samples of the oil sands, were arranged in glass and formed the background of the booth. Cubes of the Chickasaw granite and the Cherokee marble and many blocks of building stone, filtering rock, oolite, etc., were shown in this booth. A large relief map of the Choctaw coal fields and many pictures and plates of the top works of coal mines, oil wells, and asphaltum works were attractively placed in this booth.

A comprehensive display of the corn and cotton products of the Territory was made in the two booths maintained in the Palace of Agriculture. The Indian Territory is particularly a cotton country. The executive commissioner states that no finer staple is sold on the Liverpool market than that which grows in the bottoms along the Arkansas, Verdigris, Canadian, Washita, and Red rivers. Corn, wheat, oats, rye, and in fact all grains and produce that flourish in such States as Kansas, Iowa, Illinois do equally well in Indian Territory. With practically an unvarying temperature, and an abundant

rainfall, the "Indian lands," will, within a few years, be converted into grand agricultural domains, rich and beautiful.

Though not the largest, one of the most attractive displays in the Palace of Horticulture was that of the Territory. Occupying the very center circular space of the building, this booth was kept constantly supplied with Indian Territory products of the orchard and flower gardens. Apples, peaches, pears, grapes, and plums grow to perfection in the Territory, and the many thousands who saw the fruit display at the Exposition will doubtless attest the fact that surprising are the products from orchards and gardens of the Territory.

INDIAN SCHOOL EXHIBIT.—Under the appropriation of $65,000 for an Indian school exhibit, illustrating the progress of the Indians along educational lines, there was constructed, under the direction of the superintendent of the exhibit, a building 40 feet by 208 feet, with a rear addition, which was used as a recitation room and concert hall. The cost of the building was $17,000, exclusive of the inside carpenter work, wiring, and plumbing, which was done by student labor.

The general scheme of the exhibit was designed to illustrate the contrast between the old life of the Indians and the new, with the several stages of progress in Indian life and manners brought about by the educational and administrative policy of the Government. With this end in view groups of old Indians were collected from the various tribes as follows: Apache, 15; Arapaho, 23; Comanche, 5; Maricopa, 5; Navaho, 21; Cheyenne, 17; Pawnee, 21; Pima, 7; Pueblo, 24; Pomo, 2; Sioux, 35; Chippewa, 20, and Wichita, 20. There were also brought to the exhibit 150 students, taken from the following Indian schools: Chilocco, Haskell, Genoa, Fort Shaw, and Sacaton. Included among these students was a fine Indian band of 40 pieces.

The first floor of the building was divided by a wide hall way into two long compartments, which were subdivided into rooms or booths. On one side the booths were filled with representative Indians from the various tribes at work in their native industries, the arrangement in each case having been made as realistic as practicable. Sixteen booths were thus occupied by these old Indians. Beginning at the south end of the building the first booth contained some Pueblo women grinding corn and making wafer bread in the primitive manner; in the next booth Geronimo was working industriously on bows and arrows, for which he found a ready sale; then came the Pueblo pottery makers and Pueblo weavers; the Pomo basket makers; the famous Pima basket weavers; the Maricopa pottery makers; Navaho blanket weavers; Sioux pipestone workers; Sioux bead and buck-stone workers; the Jicarilla Apache basket makers; the celebrated Navaho silversmiths; the Chippewa basket, bead, and mat workers; the Wichita and Pawnee bead and buckskin workers, and the Cheyenne bead and buckskin workers.

On the opposite side of the hall, in contrast to the old-time corn grinders and bread bakers, there was a modern domestic-science department, including laundry, kitchen, and dining room, conducted entirely by Indian girl students. The furniture in this department was made entirely by Indian boys. The kitchen was equipped with good tables, cupboard, sideboard, etc., all of solid oak, and the dining-room furniture and fittings were in mahogany. In this department the girls gave daily demonstrations in laundering, cooking, and dining-room service.

There was also a fully-equipped printing department, in which was published a daily paper called the Indian School Journal, copies of which were distributed to visitors. This department, as well as the one last mentioned, attracted a great deal of interest among visitors.

Upon the same side of the hall were various other exhibits, illustrating the industrial training given at the several Indian schools. There was a wagon-making department, a blacksmith department, a carpenter and manual-training department, a sewing department, and a harness-making department, all fully equipped, in daily operation and conducted as they are at the Indian schools.

In the assembly hall, a kindergarten class recited morning and afternoon, followed by a class of seventh-grade students. Band concerts were given from the portico from 9 to 11 a. m. and from 1.30 to 3.30 p. m. every day, and literary and musical exercises were given by the students daily from 4 to 5 o'clock.

The older Indians lived in a number of native houses occupying the plaza in front of the exhibit building. These houses were constructed as nearly as possible like the primitive homes of the aborigines of the country before the changes wrought by education and the advance of the white man had been effected. Beginning at the left of the semicircle, there was a native bark house constructed by the Kickapoos from Kansas; next in order came a Pima (Arizona) native house, a Maricopa (Arizona) home, three Navaho (New Mexico) hogans, a group of Cheyenne and Arapahoe tepees, a Pawnee ceremonial mud lodge, a Wichita grass lodge, an Acoma pueblo, a Pomo (California) home, a Santa Clara Pueblo house, a Jicarilla Apache house, a Sioux (South Dakota) village, and a Chippewa village. These native homes attracted a great deal of attention, especially the Kickapoo, Navaho, Pawnee, and Wichita houses. They presented an interesting picture of the old-time Indian architecture, and at the same time furnished a striking illustration of the improvement in Indian life and manners which has been brought about by the efforts of the Government in the past few years.

The attendance was at all times large, from 10,000 to 25,000 persons having visited the exhibit daily. Among the visitors were many eminent educators, both American and foreign; and among the latter

were several representatives of England, France, and Germany, who came for the purpose of studying American methods of dealing with primitive people. All the visitors expressed themselves as well pleased with the exhibit; and there seems reason to believe that it had a very beneficial effect upon the public at large in removing some long-standing prejudices against the Indian and opening their eyes to the progress which is being made by the race under modern educational and administrative methods.

LEWIS AND CLARK CENTENNIAL EXPOSITION.

By section 2 of the act of Congress approved April 13, 1904, entitled "An act to authorize the Government of the United States to participate in the celebration of the one hundredth anniversary of the exploration of the Oregon country by Captain Meriwether Lewis and William Clark in the years 1804, 1805, and 1806," provision is made for the exhibition at the Lewis and Clark Centennial Exposition to be held at Portland, Oreg., May 1, 1905, by the several Executive Departments, of such articles and material as may illustrate the function and administrative faculty of the Government in time of peace and its resources as a war power, tending to demonstrate the nature of our institutions and their adaptation to the wants of the people, and for the selection from the Government exhibit at the Louisiana Purchase Exposition of such articles and things as may be deemed advisable, and to transport the same to Portland, Oreg., to form a part of the Government exhibit at said exposition, for which purpose a United States Government board was authorized to be created. Pursuant to such provision, Mr. Edward M. Dawson, chief clerk of the Department, has been selected as the representative of the Secretary of the Interior on the board of management.

By section 3 of the same act the Secretary of the Interior is authorized to select so much of the Alaska exhibit at the Louisiana Purchase Exposition as he may deem necessary for the purpose of making such exhibit at the exposition above referred to, and to appoint one or more persons to supervise the selection, purchase, preparation, transportation, arrangement, installation, safe-keeping, exhibition, and return of such articles as may be exhibited, for which purpose the sum of $25,000 was appropriated. It was further provided that sufficient space in a Government building or buildings, to be erected under the supervision of the Secretary of the Treasury, be furnished for the use of such exhibit. Governor John G. Brady, of the District of Alaska, has been designated as acting executive commissioner in charge of the Alaska exhibit, and steps are now being taken with the view to the selection of such articles as may be deemed appropriate from the Alaska

exhibit at the Louisiana Purchase Exposition for removal to Portland, Oreg., to form a part of the Alaska exhibit at the Lewis and Clark Centennial Exposition.

THE MARITIME CANAL COMPANY OF NICARAGUA.

Section 6 of the act of Congress approved February 20, 1889, entitled 'An act to incorporate the Maritime Canal Company of Nicaragua" 25 Stat. L., 675), provides:

> Said company shall make a report on the first Monday of December in each year to the Secretary of the Interior, which shall be duly verified on oath by the president and secretary thereof, giving such detailed statement of its affairs, and of its assets and liabilities, as may be required by the Secretary of the Interior, and any wilfully false statement so made shall be deemed perjury, and punishable as such. And it shall be the duty of the Secretary of the Interior to require such annual statement and to prescribe the form thereof and the particulars to be given thereby.

The report of this corporation, I am advised, is in preparation, and will be transmitted to the Department within the time prescribed by law; upon receipt thereof it will be duly forwarded to Congress.

All of which is most respectfully submitted.

ETHAN ALLEN HITCHCOCK,
Secretary.

The PRESIDENT.

* * * * * * *

PAPERS

ACCOMPANYING

REPORT OF THE SECRETARY OF THE INTERIOR.

REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., October 8, 1904.

SIR: In submitting the annual report of this Office for the fiscal year ended June 30, 1904, I have to state that the business of the Office shows a small decrease from the year 1903, the total receipts being $9,283,341.98, a decrease of $1,741,401.67 from the preceding year, and the total area disposed of being 16,405,821.95 acres, a decrease of 6,418,477.70 acres. With the exception of the year 1903, the cash receipts are, however, greater than for any year since the fiscal year 1889.

There were 56,386 patents of all classes issued during the fiscal year, an increase of 2,021 over the preceding; but there were 89,433 cases pending in the Office on July 1, 1904, and I have, therefore, included in my annual estimates an item for ten additional clerks at $1,200 per annum.

ADDITIONAL SPACE FOR CLERKS AND RECORDS.

By letters of February 27 and March 11, 1904, the needs of this Office in the matter of additional space were called to the attention of the Department. When the General Land Office was removed, in March, 1900, to the public building in which it is now located, the space then assigned to it was barely sufficient for the accommodation of the records and the clerical force. Since then the force has been increased by 65 clerks, without any increase in the number of rooms, and a proper regard for the orderly and convenient working of the clerical force, and the health of its individual members, requires that some provision be made for additional space in the building, or in some other suitable building conveniently situated.

The great and regular increase of the past few years in the sales of public lands has caused a consequent increase in the records. A very large part of the old records and files is stored away in boxes and piled in the attic, and the remainder is stored in the lower hall and passage-way under the court, adjacent to steam pipes, which so affect them that

the binding of the books become destroyed, and papers so baked as to become brittle and break when handled. Inquiries are frequently received for information regarding transactions relating back to the organization of the Office and the intervening period, and access to the records is extremely difficult, causing a waste of time on the part of the clerical force. These old records and files are as valuable as the current ones, and reference has to be made to them very often in order to trace back titles, and their condition is such as to require three or four times the period for the examination of a particular record or file, as would be necessary if systematically arranged. To accommodate the clerical force, with a view to its efficiency, and provide for the systematic arrangement of its records and files in such manner as to render them easy of access for the next ten years, it is estimated that it will require 28 additional rooms 16 by 20 feet (height of ceiling not less than 12 feet), and I can not too strenuously urge that the additional space be provided.

DISPOSAL OF PUBLIC LANDS.

The following is a statement of the acreage disposed of during the fiscal year ended June 30, 1904:

CASH SALES.

	Acres.
Private entries	22,308.12
Public auction	68,603.78
Preemption entries	9,675.25
Timber and stone entries	1,306,261.30
Mineral-land entries	88,182.55
Desert-land entries (original)	753,731.33
Excesses on homestead and other entries	22,009.87
Coal-land entries	28,827.42
Town sites	138.55
Supplemental payments	1.79
Abandoned military reservations	2,330.79
Under sundry special acts	5,273.98
Total	2,307,344.73

MISCELLANEOUS.

	Acres.	
Homestead entries (original)	10,171,265.97	
Entries with—		
Military bounty land warrants	32,164.44	
Agricultural college scrip	960.00	
Private land scrip	7,880.00	
Red Lake and Pembina scrip	480.00	
Valentine scrip	80.00	
Sioux half-breed scrip	400.00	
Dodge scrip	40.00	
State selections	1,042,398.39	
Railroad selections	2,353,584.96	
Wagon-road selections	77,709.10	
Indian allotments	4,610.19	
Small holdings	447.93	
Donation act	320.00	
Swamp lands patented	259,207.23	
		13,951,548.21
Total area of public-land entries and selections		16,258,892.94

INDIAN LANDS.

	Acres.	Acres.
Cherokee school	579.62	
Southern Ute	11,286.27	
Ute	38,426.23	
Osage trust and diminished reserve	10,998.36	
Chippewa	120.00	
Red Lake Indian Reservation ceded lands	73,524.27	
Otoe and Missouria	40.00	
Omaha	360.30	
Absentee Shawnee Indian school land	319.50	
Umatilla	1,759.68	
Sioux	41.44	
Uinta and White River Ute lands	720.38	
Colville Indian reserve	8,752.96	
		146,929.01
Grand total		16,405,821.95

RECAPITULATION.

Area sold for cash	2,307,344.73	
Area miscellaneous entries	13,951,548.21	
Area Indian lands	146,929.01	
Aggregate		16,405,821.95

Showing a decrease of 6,418,477.70 acres as compared with the aggregate of disposals for the fiscal year 1903.

The foregoing statement does not include the following entries, the areas of which have been previously reported in the original entries of the respective classes:

	Acres.
Final desert-land entries	268,913.43
Homesteads commuted to cash	2,142,185.44
Timber-culture entries commuted under act March 3, 1891	320.00
Abandoned military reservations	18,804.81
Cash substitutions	2,721.49
Supplemental payments	178.14
Under sundry acts	11,913.32
Final homesteads	3,232,716.75
Final timber-culture entries	70,640.05
	5,748,393.43
Commuted homestead and final desert entries, Indian lands	88,860.22
Total	5,837,253.65

The number of filings and fees thereon will be found in the following table:

	Number.	Fees.
Preemption declaratory statements	297	$857.00
Homesteads, soldiers' declaratory statements	1,097	2,307.00
Coal land, declaratory statements	2,985	8,764.00
Reservoir, declaratory statements	1,303	2,691.00
Valentine scrip applications	3	3.00
Mineral-land applications	1,773	17,730.00
Timber and stone applications	9,582	95,820.00
Town-site applications	2	6.00
	17,042	128,178.00
Mineral adverse claims	229	2,290.00
Total	17,271	130,468.00
Miscellaneous fees:		
For reducing testimony to writing, etc		111,660.85
For cancellation fees		4,993.00
Aggregate of fees		247,121.85

CASH RECEIPTS.

The following is a statement of the cash receipts of the Office from various sources during the fiscal year ended June 30, 1904:

Sales of land at private entry	$28,293.84
Sales of land at public auction	103,198.20
Sales of land by preemption entry	12,480.96
Sales of timber and stone land	3,266,142.96
Sales of mineral land	354,064.86
Sales of desert land (original)	188,405.49
For final desert land	268,922.12
For commuted homesteads	2,747,659.61
For timber-culture entries commuted under act of March 3, 1891	400.00
For excesses on homestead, timber-culture, and other entries	31,172.28
For sales of coal lands	395,209.90
For sales of town sites	323.20
For sales of town lots	120.00
Interest payments on commuted homesteads	8,535.71
For competitive bids	329.25
For supplemental payments	34.18
Cash substitutions	3,263.03
Sales of abandoned military reservations	26,726.82
Sales under sundry special acts	10,620.43
Total	7,445,902.84

FEES AND COMMISSIONS.

For homestead entries (original and final)	$1,050,551.16	
For timber-culture entries (final)	1,820.00	
For entries with—		
Military bounty land warrants	805.50	
Agricultural college scrip	24.00	
Valentine scrip	2.00	
Dodge scrip	1.00	
For State selections	12,322.00	
For railroad selections	29,542.00	
For wagon-road selections	976.00	
For lands entered under donation act	10.00	
For commissions on commuted homesteads (Indian ceded lands)	6,815.38	
For preemption, coal, reservoir, and other filings	128,178.00	
For mineral adverse claims	2,290.00	
For cancellation notices	4,993.00	
For reducing testimony to writing, etc	111,660.85	
		$1,349,990.89

Total receipts from disposal of public lands	8,795,893.73
Total receipts from disposal of Indian lands	333,757.62
Total receipts from depredations on public lands	72,585.08
Total receipts from sales of timber under acts March 3, 1891, and June 4, 1897	56,691.70
Total receipts from sales of Government property (office furniture, etc.)	738.85
Total receipts from furnishing copies of records and plats	23,675.00
Grand total	9,283,341.98

The total cash receipts for the fiscal year 1903 were $11,024,743.65, showing a decrease in receipts for the year ended June 30, 1904, of $1,741,401.67.

The total expenses of district land offices for salaries and commissions of registers and receivers, incidental expenses, and expenses of depositing public moneys during the fiscal year ended June 30, 1904, were $842,975.51, an increase of $14,112.89.

The aggregate expenditures and estimated liabilities of the public land service, including expenses of district land offices as stated, were $2,100,093.92, leaving a net surplus in the United States Treasury of $7,183,248.06.

Statement showing amounts covered into Treasury to the credit of the reclamation fund from sales of public lands, up to and including the fiscal year 1903, and an estimate of the same in the various States and Territories for fiscal year ended June 30, 1904.

[See act June 17, 1902, 32 Stat., 388.]

State or Territory.	Total for three years ended June 30, 1903.	Estimate for 1904.	Total for four years ended June 30, 1904.
Arizona	$130,133.71	$36,270.15	$166,403.86
California	1,342,492.16	629,416.05	1,971,908.21
Colorado	1,178,807.90	412,359.66	1,591,167.56
Idaho	1,157,780.58	487,748.97	1,645,529.55
Kansas	76,972.22	20,877.36	97,849.58
Montana	1,330,449.29	418,553.61	1,749,002.90
Nebraska	373,926.88	104,046.54	477,973.42
Nevada	37,550.84	10,602.57	48,153.41
New Mexico	301,508.15	118,699.11	420,202.26
North Dakota	2,472,412.78	933,687.36	3,406,100.14
Oklahoma	1,873,562.20	678,575.13	2,552,137.33
Oregon	2,807,931.74	1,422,728.01	4,230,659.75
South Dakota	556,258.51	186,522.09	742,780.60
Utah	235,696.76	66,654.27	302,351.03
Washington	1,903,388.31	831,975.67	2,735,362.98
Wyoming	665,472.01	209,781.87	875,253.88
Total	6,568,497.42	6,568,497.42	23,012,836.46

PATENTS ISSUED DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

There were 56,386 patents of all classes issued during the year. Of this number 52,102 are classed as agricultural, 1,247 Indian allotments, 2,504 mineral land, 174 coal land, 95 private land claim, 210 railroad, and 54 swamp land patents. This is an increase of 4,448 agricultural patents over patents of the same character during the preceding year.

Railroad and wagon-road patents.—During the year there were certified and patented under the several land grants for the construction of railroads and wagon roads 4,551,071.66 acres, a decrease of 1,265,885.38 acres from the preceding year.

Swamp-land patents.—There were 259,207.23 acres of ordinary swamp lands patented to the various States during the year, a decrease of 2,650,540.65 acres, which decrease is accounted for by the fact that during the preceding year one patent was issued covering 2,862,280 acres of lands situated in the Everglades and Mangrove Swamp in Florida.

Military bounty land warrants.—There have been, approximately, 30,960 acres of public lands located with military bounty land warrants during the year.

DISPOSALS OF PUBLIC AND CEDED INDIAN LANDS.

The records of the Public Lands Division show continued activity in the disposal of public and ceded Indian lands.

On June 30, 1903, 255,724 original entries were pending in this division, and 98,948 entries were received during the year. Of these 25,171 were canceled during the year, 47,786 were passed to final

entry, and 8,789 were referred to other divisions, leaving a balance pending June 30, 1904, of 272,926.

On June 30, 1903, there were 39,310 final entries pending in the Public Lands Division, and 67,386 final entries were received during the year, making a total of 106,696. Of this number 167 were disposed of by cancellation during the year, 10,485 were referred to other divisions, and 58,420 were approved for patenting, leaving a balance pending on June 30, 1904, of 37,624, a decrease of 2,286 in the number of final entries pending at the beginning of the fiscal year.

The number of final entries approved for patenting the past year was 18,645 more than the preceding year, and was larger than in any previous year in the history of the division. There were also 49,161 letters and decisions written in this division the past year, being more than in any other year since its organization.

AGRICULTURAL LANDS IN INDIAN RESERVATIONS.

Instructions and schedules of land were issued the past year for the sale and disposal of agricultural lands in the following ceded Indian reservations, viz:

	Acres.
Chippewa Reservations, Minnesota	1,017,618.12
Red Lake Reservation, Minnesota	256,143.58
Rosebud Reservation, South Dakota	385,887.11
Devils Lake Reservation, North Dakota	88,948.39
Grande Ronde Reservation, Oregon	26,264.65
Total	1,774,861.85

LEGISLATION IN REGARD TO ARID LANDS.

On April 28, 1904 (see 33 U. S. Stat., 547), the act known as the Kinkaid Act became a law. This legislation is experimental, and is intended to solve the problem as to the disposition of lands not susceptible of irrigation. The law provides, in brief, that homestead entries in the State of Nebraska, west and north of certain designated lines, shall not exceed in area 640 acres, and must be in as nearly compact form as possible, and in no event exceed 2 miles in extreme length, and provision is made for additional entries of contiguous land by persons who own and occupy lands previously entered by them. The law also provides for the exclusion from the effect of the act of such lands as, in the opinion of the Secretary of the Interior, it may be reasonably practicable to irrigate under the national irrigation law or by private enterprise.

Instructions have already been issued under the Kinkaid Act for the disposal of 8,000,000 acres of land in Nebraska, and there have been withdrawn under said law 1,000,000 acres determined to be practically susceptible of irrigation.

RECLAMATION OF ARID LANDS.

Instructions were issued June 3, 1904, in regard to the Minidoka reclamation project in Idaho, under the act of June 17, 1902 (32 U. S. Stat., 388). This project comprises land in thirteen different townships, viz: Townships 9, 10, and 11 south, of ranges 22 and 23 east; townships 8, 9, 10, and 11 south, of range 24 east; and townships 8, 9, and 10 south, of range 25 east, estimated to contain from 125,000 to

150,000 acres. The "farm units" or limits of area allowed per entry in said project varies from 40 to 80 acres (except in fractional subdivisions, which are more or less), lands situated within a radius of 1½ miles from the center of a town site, being divided into 40-acre units. The charge for the lands in this project will probably be from $25 to $35 per acre.

Instructions are also in course of preparation for the Truckee-Carson project in the State of Nevada. The lands included therein are in townships 18 and 19 north, ranges 28 and 29 east, Mount Diablo meridian, and embrace 21,580.89 acres. There are 239 "farm units" therein, varying in size from 40 to 160 acres. The price of lands in this project has been fixed at $26 per acre, payable in ten annual installments.

The following statement obtained informally from the Geological Survey, shows, by States, the amount of land withdrawn under said act of June 17, 1902, up to June 15, 1904, the acreage thereof restored, and the lands remaining withdrawn after such restoration, viz:

State or Territory.	Withdrawn.	Restored.	Remaining withdrawn.
	Acres.	*Acres.*	*Acres.*
Arizona	3,325,000		3,325,000
California	1,968,300		1,968,300
Colorado	2,399,000	1,495,000	904,000
Idaho	3,694,760		3,694,760
Kansas			
Montana	9,013,600	1,035,000	7,978,600
Nebraska	2,599,000	46,000	2,553,000
Nevada	4,103,040	202,920	3,900,120
New Mexico	995,000	161,000	834,000
North Dakota	1,013,720		1,013,720
Oklahoma			
Oregon	1,504,600	91,520	1,413,080
South Dakota	1,680,290		1,680,290
Utah	92,000		92,000
Washington	4,278,530	69,000	4,209,530
Wyoming	3,289,200	944,690	2,344,510
Total	39,956,040	4,045,130	35,910,910

EXAMINATION OF CEDED CHIPPEWA LANDS IN MINNESOTA.

The work of examining the lands in the former Chippewa Indian reservations, ceded under the act of January 14, 1889 (25 Stat., 642), was brought to a completion March 31 last. There were examined during the past year 725,818.98 acres, embracing lands in the Pigeon River, Fond du Lac, Bois Fort, Deer Creek, Red Lake and Chippewa of the Mississippi reservations. Of the total lands examined 88,320 acres were classified as "pine" lands, and the estimates indicated that there are 172,445,000 feet of merchantable pine timber thereon.

All the lands in the different ceded Chippewa reservations classed by the examiners as "agricultural" have been opened to settlement and entry, except 20 townships in the Red Lake Reservation, the surveys of which have not yet been accepted, and except lands in the Fond du Lac and Leech Lake reservations, which, under section 5 of the act of June 27, 1902 (32 Stat., 400), can not be opened until the allotments to the Indians therein have been completed.

The timber on all the lands classed as "pine" has been sold or advertised for sale, except the timber on lands reserved for the purpose of allowing the Forester of the Department of Agriculture to

complete the selection for forestry purposes under said act of June 27, 1902. This selection on his part will be necessarily delayed pending the completion of allotments to the Indians and also until the flowage lines, caused by the construction of dams at the headwaters of the Mississippi River, have been definitely determined.

SALES OF CHIPPEWA PINE TIMBER.

There were two sales of pine timber on ceded Chippewa lands held at Cass Lake, Minn., in December last, 415,000,000 feet of timber being sold for $2,650,903, or an average of $6.38 per 1,000 feet. Twenty per cent of the amount of the sales has already been paid.

Instructions and schedules have also been issued for the sale at Cass Lake, Minn., on November 15 next, of the pine timber on 116,190.26 acres of "pine" lands, estimated to contain 210,774,000 feet of timber, and for the sale at the same place on November 17, 1904, of 95 per cent of the pine timber on 16,833.96 acres, estimated to contain 12,967,000 feet of timber.

LOGGING OPERATIONS ON CEDED CHIPPEWA LANDS.

During the past logging season, there were cut from ceded Chippewa lands 45,590,448 feet of timber, the price paid being $269,198.13, or an average of $5.90 per 1,000 feet. The expense to the Indians of logging said timber was $14,421.82, or a little over 5 per cent.

Logging operations have, except as to about 1,400,000 feet still standing, been completed on the "pine" lands on fifteen of the school sections in the Red Lake and White Earth reservations, embracing 6,912.33 acres, the timber on which was sold at Crookston, Minn., on March 2, 1903. On these sections the scalers' reports show that there were 16,495,587 feet of timber cut. These sections, except as to one section examined in 1899, in which case the estimates and amount cut are about equal, were examined in the years 1893, 1894, and 1895 by Government estimators, who reported that there were only 10,151,000 feet thereon, or about 56 per cent of the amount of timber actually on the land.

Nine sections in the Chippewa of the Mississippi reservations, involving 2,440.49 acres, the timber on which was sold at Cass Lake, Minn., on December 5 last, were cut clean the past season, there being 4,789,115 feet cut, as against 4,241,000 feet estimated to be thereon by Government estimators.

For the timber on the twenty-four sections cut clean, except as to 1,400,000 feet as above stated and involving 9,352.82 acres, the price paid was $109,847.61, or an average of $11.74 per acre.

THE FOLLOWING STATEMENT SHOWS THE RESULT OF THE OPENING OF INDIAN RESERVATION LANDS AUTHORIZED BY ACTS OF CONGRESS PASSED DURING THE LAST SESSION OF CONGRESS, UPON THE RED LAKE RESERVATION, MINN., THE GRANDE RONDE RESERVATION, OREG., THE ROSEBUD RESERVATION, S. DAK., AND THE DEVILS LAKE RESERVATION, N. DAK.

As provided by the act of February 20, 1904 (33 Stat., 46), the Red Lake Indian lands of Minnesota were offered at public sale at Thief River Falls, Minn., commencing at 9 o'clock a. m., June 20, 1904, and

said sale was continued until July 14, 1904, at which time the same was adjourned to be resumed at Crookston, Minn., October 3, 1904.

There were sold 610 tracts, aggregating in area 93,747.59 acres, amounting to $589,117.20, or an average price of $6.28 per acre.

The amount received at this sale was $117,823.44, being 20 per cent of the total value of the land sold.

At the continuation of the public sale of Red Lake lands at Crookston, Minn., October 3 to 8, 1904, 1,035 tracts, containing 162,197.29 acres, were offered.

There were sold 129 tracts, containing 20,388 acres, for $90,559.65. The purchasers paid one-fifth of the purchase price, amounting to $18,111.93.

The highest bid received was $9.70 per acre; the lowest $4 per acre, and the average price was $4.44.

The total acreage in this reservation offered at public sale was 255,945.16 acres, of which amount 114,135.87 acres were sold for $679,676.85, one-fifth of the purchase price, namely, $135,935.37, being paid by the purchasers.

There remain unsold 141,809.29 acres.

Sealed bids for the sale of a part of the Grande Ronde Indian Reservation lands in Oregon, as provided by the act of April 28, 1904 (33 Stat., 567), were received at Oregon City, Ore., land office, from 9 o'clock a. m. on Monday, August 1, 1904, until 11 o'clock on Monday, August 8, 1904.

The total area of this reservation offered for sale was 26,021.54 acres, divided into 181 tracts of approximately 160 acres each.

Three hundred and thirty-three bids were received for 111 different tracts, aggregating in area 16,418.48 acres, and ranging in price from $1.25 to $11.75 per acre, or an average price of $4.05 per acre, amounting to $66,497.21. Checks and money orders for $13,215.44 were received, representing practically 20 per cent of the amount bid, and the recommendation of the acceptance of these bids has been approved by the Secretary of the Interior.

There are 9,603.06 acres for which there were no bids. The act provided that no bids should be accepted until the sum of all bids received should equal or exceed $28,500, and as $66,497.21 were received for less than two-thirds of the lands offered for sale, the sale is considered highly satisfactory.

The unallotted and unreserved lands of the Rosebud Indian Reservation, S. Dak., aggregating in area 385,817.11 acres, divided into 2,412 claims of approximately 160 acres each, subject to disposal under the provisions of the act of April 23, 1904 (33 Stat., 254), were opened to homestead entry by registered applicants only during the first sixty days, and thereafter by the first legal applicant, in the order established by the drawing of July 28, 1904, at Bonesteel, S. Dak., August 8, 1904, and such opening continued for lands in that district until and including September 10, 1904, and thereafter at Chamberlain, S. Dak.

The law fixes the price of these lands at $4 per acre, to be paid in installments and provides for reduction to $3 and $2.50 per acre after periods of three and six months, respectively, after opening and for disposal, for cash, under rules and regulations and slightly different conditions after expiration of four years after opening.

One hundred and six thousand three hundred and eight persons registered as applicants for said lands.

During the month of August, 1904, 938 homestead entries were made for these lands, aggregating in area 147,838.68 acres, upon which the first payment required under the act of April 23, 1904, supra, of $1 per acre, was made, aggregating $147,838.68.

Thirteen applications, under the President's proclamation of May 13, 1904, were received for the reservation from homestead entry for as many town sites in the ceded Rosebud Indian lands, South Dakota. After a careful investigation of the same and an examination of the tracts applied for in the field, the applications were, on July 28, 1904, submitted to the Secretary of the Interior, and the reservation of four town sites, covering 1,079.24 acres, was recommended, and on August 2, 1904, the recommendation was approved by the Acting Secretary of the Interior and the other applications were rejected.

The unallotted and unreserved lands of the Devils Lake Indian Reservation, aggregating in area 88,948.39 acres, divided into 556 claims, of approximately 160 acres each, to be disposed of under the provisions of the act of April 27, 1904 (33 Stat., 319), were opened to homestead entry by registered applicants only during the first sixty days, and thereafter by the first legal applicant, at the Devils Lake office, North Dakota, on Tuesday, September 6, 1904, at 9 o'clock a. m., and in the order established by the drawing of August 24, 1904, as prescribed by proclamation of June 2, 1904. Fifteen thousand and eighty-six persons registered as applicants for these lands.

These lands are to be paid for at the rate of $4.50 per acre, as follows: $1.50 when the entry is made, and the remainder in annual installments of 50 cents per acre.

The monthly report for September, which would include entries under this act, has not yet been received.

Public Surveys.

The areas covered by the surveys accepted by this Office during the fiscal year ended June 30, 1904, are as follows:

State or Territory.	Acres.	State or Territory.	Acres.
Alaska	1	North Dakota	529,805
Arizona	430,186	Oregon	359,809
California	211,524	South Dakota	1,159,134
Colorado	108,590	Utah	305,043
Idaho	505,166	Washington	332,454
Minnesota	274,683	Wyoming	429,141
Montana	2,330,007		
Nevada	68,159	Total	7,394,850
New Mexico	351,148		

By the act of Congress approved March 3, 1903 (32 Stat., 1116), making appropriations for sundry civil expenses of the Government for the fiscal year ended June 30, 1904, and for other purposes, there was appropriated "For surveys and resurveys of public lands" the sum of $400,000, of which amount the Commissioner of the General Land Office was authorized to expend so much as he might deem necessary for examinations in the field, etc.

Out of said appropriation the sum of $80,000 was set apart to cover the cost of examinations in the field, the sum of $15,000 was reserved for emergencies, and the remainder, $305,000, was apportioned among the several surveying districts.

The apportionments made to the several districts were as follows:

Alaska	$50,000	North Dakota	$15,000
Arizona	14,000	Oregon	22,000
California	15,000	Utah	16,000
Colorado	6,000	Washington	32,000
Idaho	32,000	Wyoming	30,000
Minnesota	10,000	Examinations	80,000
Montana	43,000	Reserve	15,000
Nevada	10,000		
New Mexico	10,000	Total	400,000

Further apportionments were made from time to time to several surveying districts, and toward the end of the fiscal year contracts aggregating $50,000 were awarded from the uncontracted balance of the appropriation, for resurveys in Routt and Rio Blanco counties, Colo., authorized by the act of Congress approved April 28, 1904 (33 Stat., 519).

During the fiscal year surveying contracts were approved aggregating $444,789, payable from the regular appropriation for surveys and resurveys, deposits by individuals, deposits by railroad companies, railroad repayments, the continuing appropriations per act of March 2, 1895, for surveys within railroad limits, and from the appropriation for the survey of abandoned military reservations, and appropriations for Indian surveys.

* * * * * * *

EXAMINATIONS OF SURVEYS IN THE FIELD.

By the act of Congress making appropriations for sundry civil expenses of the Government for the fiscal year ended June 30, 1904, approved March 3, 1903 (32 Stat., 1116), there was appropriated for surveys and resurveys of public lands the sum of $400,000. Of the amount appropriated the Commissioner of the General Land Office was authorized by said act to expend so much as he might deem necessary for examinations of surveys in the field, in order to test the accuracy of the work of deputy surveyors, and the examination of surveys heretofore made and reported to be defective or fraudulent. Acting under this authority, the Commissioner, with the sanction of the Department, set apart the sum of $80,000 for field examinations.

There were employed during the year fourteen examiners of surveys, to whom instructions were issued for the inspection of surveys reported by the several surveyors-general as being ready for examination in the field. A portion of these examiners were actively engaged during the entire year, and the remainder were employed in the field during a part of the year according to the exigencies of the service and the conditions of the weather during the winter season. One clerk (an experienced surveyor) of the Division of Public Surveys was detailed as an examiner during a part of the year. The compensation and expenses of the examiners of surveys and the expenses of the detailed clerk were paid out of the fund of $80,000 assigned for field examinations, except in the case of the examination of surveys of Indian reservations and surveys of private land claims, when the cost was paid

from the proper appropriation for Indian surveys and from the appropriation for the survey of private land claims, respectively.

During the fiscal year surveys executed under contracts or special instructions issued in lieu of contracts in the several surveying districts were accepted after thorough inspection in the field by the examiners and subsequent critical examination of the surveying returns in this Office and comparison with the reports of the examiners, as follows:

Surveying districts.	Contracts.	Special instructions.	Surveying districts.	Contracts.	Special instructions.
Arizona	11	0	New Mexico	8	0
California	13	3	North Dakota	3	0
Colorado	2	1	Oregon	6	1
Idaho	8	0	South Dakota	5	0
Minnesota	7	0	Utah	8	0
Montana	23	1	Washington	16	1
Nevada	1	0	Wyoming	4	0

The surveys accepted during the fiscal year, as reported in the above table, consisted in most cases of complete surveys under given contracts; in other cases the acceptances covered partial surveys, the entire work not being returned during the fiscal year. In a number of cases surveys were accepted which had been suspended during prior years on account of errors in the field work reported by the examiners of surveys, or on account of defects in the returns, and, in other cases, portions of the surveys under certain contracts returned during the year, which were found to have been in accordance with contract and instructions, were accepted, but other portions of the work under such contracts were suspended awaiting corrections in the field. In three cases the surveys were found to have been so poorly executed as to necessitate their being held for rejection.

In addition to the surveys accepted during the fiscal year 1904, after examinations in the field, there were accepted, without field examination, surveys executed under two sets of special instructions in California, one in Colorado, three in Idaho, five in Minnesota, three in North Dakota, and three in Washington. These surveys all involved small liabilities or were so inconveniently situated that the expense of examination in the field would have been disproportionate to the cost of the surveys. The evidence afforded by the office examination of the returns appeared to show that the surveys had been executed as required by the instructions given to the surveyor, who in each case bore a record for correct surveys, and they were accordingly accepted.

The surveys accepted during the fiscal year included surveys within the following Indian reservations, viz: Chippewa Indian Reservation, Minn.; Crow Indian Reservation, Mont.; Pine Ridge and Standing Rock Indian reservations, S. Dak., and Tulalip Indian Reservation in the State of Washington.

PRIVATE LAND CLAIM SURVEYS.

During the fiscal year there were received returns of the survey of the following private land claims in Arizona and New Mexico, confirmed under the provisions of the act of Congress approved March 3, 1891 (26 Stat., 854), entitled, "An act to establish a Court of

Private Land Claims, and to provide for the settlement of private land claims in certain States and Territories," said surveys having been duly approved by the Court of Private Land Claims, viz: In Arizona, the San Jose de Sonoita grant and the San Rafael de la Zanza grant; in New Mexico, the Santa Teresa grant, Refugio Colony grant, and the San Miguel del Bado grant.

SURVEYS UNDER COMMISSIONER'S CONTRACTS AND INSTRUCTIONS.

There were a number of surveys accepted during the year which were executed under contracts made by and special instructions issued from this Office, viz: The resurvey of the boundary line between the State of Colorado and the Territories of New Mexico and Oklahoma; the completion of the survey of the east boundary of the Yellowstone National Park; the completion of the surveys in several townships in Oklahoma where lands were omitted at the time of the original survey because of their mountainous character, and the survey of eight islands in Wisconsin, two in Michigan, and one in Iowa.

SUSPENDED AND REJECTED SURVEYS.

A gratifying improvement in the surveying service is indicated by the diminution in the number of surveys found, upon examination in the field, to be defective in execution.

The causes of nonacceptance of surveys are defects discovered in the returns either by the surveyor-generals or this Office; errors developed by the field examinations, such as imperfect alignment, insufficient memorials, faulty monumentation, excess of limit of error in measurements, failure to properly mark the monuments and bearing trees, general carelessness in the work, and fraudulent surveys, bearing no evidence of an attempt to comply with contract and instructions.

During the year surveys were suspended under two contracts in California, four in Nevada, one each in New Mexico, Oregon, Utah, and Wyoming. In all of these cases, with the exception of three contracts in Nevada, portions of the surveys under each contract were found to have been properly executed and were duly accepted, and the remainder suspended for necessary corrections in the field or in the returns. The entire work under three contracts in Nevada was suspended because of general failure to comply with the requirements of the Manual of Surveying Instructions, and a correction in the field was ordered.

The surveys under one contract in Arizona were rejected because of the failure on the part of the deputy surveyor to execute the surveys in his own proper person, as required by the terms of his contract. An appeal to the Department was taken in this case, and the action of this Office in rejecting the surveys was affirmed. In the case of one contract in New Mexico, the surveys were suspended several years ago and thirty days were allowed the deputy surveyor to correct the work in the field. An extension of time for making the corrections was requested by the deputy and granted by this Office. No steps having been taken by the deputy in the matter of perfecting his surveys, the same were, in February last, rejected by this Office and the surveyor-general was authorized to let a new contract for the work.

SOUTH BOUNDARY OF COLORADO.

During the last fiscal year the final returns of the resurvey of this boundary line were filed.

The field work of the resurvey was thoroughly inspected by an examiner of surveys and the astronomical work tested by an experienced astronomical engineer connected with this Office. The monuments along the line were reported to have been well within the requirements of the contract and special instructions, and the examination of the field observations in the astronomical determinations showed very great care and accuracy on the part of the astronomer who conducted the instrumental work. The resurvey was accepted and maps filed in the offices of the surveyors-general of Colorado and New Mexico.

Since the re-establishment numerous inquiries have been received as to the effect of the new location of the line upon lands lying along the boundary which have been thrown into the Territory of New Mexico, and questions of jurisdiction have arisen in consequence.

This Office responds to such questions by the statement that the matter of adoption of this line as the true boundary between the State of Colorado and the Territories of New Mexico and Oklahoma and the change of jurisdiction over adjoining lands will have to be settled and determined by negotiations between the United States and the State of Colorado, or otherwise, and I recommend that Congress be invited to take appropriate action thereon, and also to provide at the same time for the closing of the lines of public surveys to the new line.

IDAHO-MONTANA BOUNDARY.

Congress at its last session authorized the survey and marking of the unsurveyed portion of the line between the States of Idaho and Montana, estimated at 450 miles, and there was appropriated for this purpose the sum of $50,000.

Upon the recommendation of this Office, I was authorized by the Department to enter into contract with Howard B. Carpenter, whose experience and qualifications were of the highest character, and whose excellent work in surveying the south boundaries of Utah and Colorado has been noted in previous reports.

The Idaho-Montana boundary line is the only one remaining unsurveyed and unmarked of all the lines between States and Territories of the United States. It follows the divide or watershed of the Bitter Root Mountain Range southwardly until it reaches the Rocky Mountains, or Continental Divide, the crest of which it then follows to its intersection with the east boundary of Idaho.

The problem of ascertaining the true watershed of these two mountain ranges is an interesting one, requiring accurate judgment and experience in mountain topography and involving a multitude of reconnoissance surveys as the establishment progresses.

This important work was begun by the contractor in the spring of 1904, and will probably require two seasons to complete.

LATITUDE AND LONGITUDE OBSERVATIONS TO DETERMINE LIMITS OF PUBLIC LANDS IN NEW MEXICO AND OKLAHOMA.

At the date of my last report Mr. Arthur D. Kidder, examiner of surveys of this Office, who was detailed to ascertain the true location of

the one hundred and third meridian (east boundary of New Mexico) and also the proper intersection of this meridian with the latitude of 32° north and the intersection of the one hundredth meridian with the latitude of 36° 30′ north had nearly completed his determinations.

During the last fiscal year Examiner Kidder completed his work, all the observations and determinations have been finished, and the results worked up in a detailed report submitted by him to this Office. This report, which is very thorough and exhaustive, giving all particulars of astronomical observations, deductions, and calculations, exhibiting very clearly the conditions which exist along the one hundredth and one hundred and third meridians and the above-named latitude lines, and giving the amount of variation from their proper positions, was forwarded to the Department, with the suggestion that it be transmitted to Congress for the basis of any legislative action looking toward a re-establishment of the boundary lines of Oklahoma, New Mexico, and Texas which that body may deem best to take.

FIELD EXAMINATION OF SETTLERS' APPLICATIONS FOR SURVEYS.

Under the "Timber and Stone Act" lands can be entered only after having been surveyed, and as the demand for the entry of lands under this act had reached enormous proportions in heavily timbered regions, owing to the desire to secure the timber, large areas were surveyed upon affidavits of settlement which were afterwards discovered to be fictitious. Parties were found to be engaged in manufacturing applications for surveys, and on rocky land covered with thick growth of valuable timber it became a business to erect rude cabins of logs and to make a pretense of clearing off the land in order to form a basis to sworn statements that bona fide settlement was accomplished.

During the last year it was decided to use the corps of examiners of surveys to investigate in the field all applications for surveys which alleged settlement, and the result has proven the wisdom of this course.

In the timbered regions no real settlement to any extent was found, but in most cases a mere camping hut, without furniture and destitute of the means of housekeeping, was all that the examiner could discover on the ground. It was learned that these alleged settlers resided in distant towns and cities, and that they were induced to lend their names by promises of rewards after the survey was accomplished, evidently having no intention to make their homes on the land.

This investigation has thus far resulted in materially checking the rapid absorption by unscrupulous persons of the valuable timber now standing on the public lands in the mountain districts.

WITHDRAWALS OF LAND UNDER THE RECLAMATION ACT.

Under your direction, this office has charge of the withdrawals of land for irrigation purposes. It carries out the orders of the Department in these cases by directing the local land offices to note that entries are suspended in certain townships.

Under the act two forms of withdrawal are authorized.

The first form makes provision for absolute withdrawal from all forms of disposal, owing to the desire on the part of the Department to use the withdrawal tracts for reservoir sites.

The second form suspends all disposals except for homesteads, and restricts the latter to certain limited areas and provides that the home-

steader shall conform to requirements in respect to using the water. These withdrawn lands are the tracts intended to be benefited by the irrigation works, and they are made temporary at first so that in case the project is not found feasible the lands may be restored to entry.

This office records and promulgates all withdrawals, which involves considerable clerical labor, as the amount of acreage of withdrawn lands at the close of the fiscal year was in excess of 33,000,000 acres, consisting of blocks of land set apart from time to time upon recommendation of the Director of the United States Geological Survey as the surveys progress.

SURVEYS IN UINTAH INDIAN RESERVATION.

This large reservation, embracing over 2,000,000 acres, was by Congressional enactment authorized to be surveyed in its entirety and thrown open to settlement and entry on October 1, 1904.

Township and subdivisional surveys had been made within the reservation twenty and thirty years ago for the purpose of allotment, and the additional surveys authorized were intended to complete the subdivision of the whole reservation. Contracts were let amounting to $94,000, but owing to early snows in 1903 only a small portion of the eighteen contracts was finished, and it was found that the field work of the remainder could not be finished in the season of 1904, examined, and field notes and plats prepared in time to admit of opening the reservation on October 1, 1904. Congress then extended the time to March 10, 1905.

At the close of the last fiscal year many of the contracts were completed and inspection was in progress. It is believed that all the surveys will be executed and allotments made before the end of the calendar year, so that the opening may take place at the time appointed. The only contingency that may arise, and it is one that accompanies all public land surveys, is that the surveys may upon inspection be pronounced defective in some particulars and require correction in order to conform to the requirements of the Manual, but as extraordinary precautions were taken to let contracts for this work only to reliable surveyors, it is thought that few erroneous surveys will be made.

SURVEYS IN ALASKA.

At the date of my last report this Office was awaiting the result of an investigation to be made by an examiner of surveys ordered to Alaska to inquire into the conditions there in respect to surveys of the public lands.

Mr. J. Frank Warner was selected for this mission and has made a thorough investigation of Alaskan surveys. His report is appended.

This Office had previously suspended action on numerous claims surveyed under the act of June 3, 1891, and the act of May 10, 1898, as the returns of such surveys seem to indicate that the law had not been strictly complied with. The examiner's report confirmed the correctness of this surmise, and this Office rejected the surveys, requiring new and correct lines and the establishment of adequate corners.

The matter of initiating the mission surveys was inquired into, and after receiving the examiner's report, contracts for the survey of all of the mission claims were authorized. Owing, however, to the delays

incident to the vast distance to the surveyor-general's office, and to misunderstandings on the part of the contractors as to compensation, this Office succeeded in perfecting only a small fraction of the contracts for the groups of mission surveys at the close of the last fiscal year. It is expected that this work will now proceed to completion by the close of another year.

The establishment of the base and meridian lines necessary to initiate the rectangular system of public land surveys in Alaska has been attended with much difficulty, owing to the reluctance of reliable surveyors to undertake such work in the face of the enormous obstacles found in this district. The report of an examiner was awaited prior to selecting a surveyor for the work.

Upon his recommendation a contract was entered into with a deputy surveyor who, it is believed, is qualified to carry the work of the basic lines to a successful completion. The contract was let during the last fiscal year, but it is doubtful if the surveys will be finished during the season of 1904.

Owing to insurmountable difficulties in the establishment of the regular base, standard, and meridian lines, difficulties which were not met with outside of Alaska, the progress of public surveys in Alaska will necessarily be vexatiously slow, but as soon as the base and standard lines are surveyed it is expected that the surveys of the desirable lands will proceed with greater expedition than this office has up to the present time been able to attain.

RESURVEYS IN COLORADO.

At its last session Congress authorized extensive resurveys in northwestern Colorado, in Routt and Rio Blanco counties, there having been brought to the attention of Congress the fact long known to this office that grave defects existed in the original surveys executed many years ago at a time when no inspections were made prior to payment therefor.

Nearly a hundred townships were involved. The surveyor-general of Colorado was directed in June last to enter into contracts for resurveys, the liability of which amounted to $50,000. Ten contracts were let, and the work is being vigorously prosecuted.

RAILROAD GRANTS.

During the fiscal year there were certified and patented under the several grants made by Congress to aid in the construction of railroads and wagon roads 4,551,071.66 acres, and 216 railroad and wagon-road patents were issued.

Of the area embraced in railroad and wagon-road listings and selections, 4,660 acres were canceled.

There were docketed and reinstated during the year 461 cases, and 348 were closed. Of the 1,200 cases pending at the close of the year, 178 only were ready for action, the balance having been already decided or suspended. Of the 1,130 entries on hand for action during the year, 418 were disposed of, leaving 712 pending June 30, 1904, of which 342 are included in docket cases and 345 are suspended, leaving 25 ready for action.

The 385 applications for lands within the State of Michigan which were pending at the beginning of the year have all been disposed of.

Of the 10,577 letters that were on hand for action during the year all but 205 were disposed of.

ADJUSTMENTS.

The suit brought by the United States against the Northern Pacific Railroad Company and the Northern Pacific Railway to cancel patents issued to the railroad company, to which the railway company is successor, was decided by the United States Supreme Court February 23, 1904 (193 U. S., 1), in favor of the company, and relieved from suspension a large number of claims for lands lying north of Portland, Oreg., and within the overlapping limits of that company's grant by the joint resolution of May 31, 1870, and the forfeited portion of its grant by the act of July 2, 1864. All these claims have been examined with a view to their adjustment under the provisions of the act of July 1, 1898 (30 Stat., 597, 620), excepting those wherein patents have issued and which for that reason do not come within the purview of said act; 159 have been listed for approval and have been approved by the Department for relinquishment by the company, and the company has been called upon to make the relinquishments. The remainder, excepting the few cases where the individual claimants have elected to relinquish, and which have received appropriate action, have either been rejected as not coming within the law authorizing the relinquishment, or the settlers called upon to make their election to retain or relinquish the land, or are ready for listing for submission to the Department for approval for relinquishment by the company.

In addition to the above there have been before the Office for action during the year 849 cases under the act of July 1, 1898, in different localities, 244 of which have been closed, and 457 were considered and received action looking to the final disposal. The railroad company has filed relinquishments in 248 cases, embraced in 24 lists, approved by the Department, and relieved them from conflict.

The act of March 2, 1899 (30 Stat., 993), provided for the relinquishment by the Northern Pacific Railroad Company to the United States and the selection of other lands in lieu thereof of the Mount Rainier National Park and the Pacific Forest Reserve, and the release and reconveyance was duly made. The lines of survey have been protracted by calculation over said park and reserve, and the area of the odd-numbered sections therein and within the primary limits of the company's grant, which are the lands this Office has held the company is entitled to relinquish and select lieu for, has been computed and a complete examination has been made of all lists of selections filed by the company in lieu of the land relinquished, but the claims of the company under this act could not be finally adjusted and closed for the reasons that many of the selections are still unsurveyed and some are in conflict with other claims, and also that the company claims the right of selection in lieu of lands within its indemnity limits and the Pacific Forest Reserve, which question has not yet been determined by the Department.

An examination has been made of the lands lying within the overlapping indemnity limits of the grant to the Southern Pacific Railroad

Company, main line, and the primary limits of the forfeited Atlantic and Pacific Railroad grant, and lists prepared of all the lands therein which have been patented to the Southern Pacific Company, of all lands which have been selected by said company but not patented, and of all lands which have been applied for by it and the applications are pending, for the purpose of preparing a record for the institution of suit against the Southern Pacific Company for the recovery of the patented lands and for quieting the title in the United States in all other odd sections of lands within said overlap, the right of selection of which is claimed by said company, and the suit has been brought.

Upon examination of the proofs made on their holdings by settlers in New Mexico, known as "small-holding claimants," under sections 16, 17, and 18 of the act of March 3, 1891 (26 Stat., 854), as amended by the acts of February 21, 1893 (27 Stat., 470), and June 27, 1898 (30 Stat., 495), it was found that their claims covered in whole or in part odd-numbered sections within the limits of the grant to the Atlantic and Pacific Railroad Company which had passed under said grant and could not be secured to the settlers. The railroad company was called upon to relinquish its claim under the provisions of the act of June 22, 1874 (18 Stat., 194), but declined to do so for the reason that the claims of the settlers in many instances covered but a small part of a section, and such part being the only part fit for agricultural purposes would leave the balance of the section unsalable; and thereupon Congress passed the act of April 28, 1904 (33 Stat., 556).

This latter act authorizes the railroad company, when requested by the Secretary of the Interior so to do, to relinquish to the United States any part or the whole of any section covered by the claims of these settlers within the Territory of New Mexico and select other lands of equal quality in lieu thereof, as may be agreed upon with the Secretary of the Interior. Following this act, an examination was made of the records and plats of this office and a list of all the small-holding claimants shown by them was prepared, which, together with instructions for carrying the act into effect, was transmitted to the local land officers.

Under the act of March 3, 1903, which provided for the relief of certain settlers in Alabama on lands within the limits of the grants to aid in the construction of the Mobile and Girard and the Tennessee and Coosa railroads by authorizing the relinquishment to the United States of any land recovered in any court of competent jurisdiction from such settlers, by either of said railroad companies or its assigns, releases have been made, submitted to, and accepted by the Department in 104 cases, and proper action looking to securing title to the homesteaders or the parties claiming under them have been taken.

The large number of cases involving lands within the State of Minnesota and within the limits of the grants by Congress to aid in the construction of the St. Paul, Minneapolis and Manitoba Railway, main line and branches, which had been suspended pending the adjustments of said grants and were relieved from suspension during the previous year by the completion of the adjustment, have all been disposed of.

Congress passed an act, which was approved February 26, 1904 (33 Stat., 51), for "the relief of settlers on lands in Sherman County, in the State of Oregon." The lands referred to are those lying within

the limits of the grant by the act of February 25, 1867 (14 Stat., 409), to aid in the construction of The Dalles military wagon road, and the withdrawal on that portion of the grant to the Northern Pacific Railroad (now Railway) Company along the Columbia River between Wallula, Wash., and Portland, Ore., which was declared forfeited by the act of September 29, 1890. Under a departmental ruling these lands were held to have been excepted from the wagon-road grant, were opened to entry, and numerous parties settled upon them and made entries. Subsequently, the United States Supreme Court decided that they passed under the wagon-road grant, and the claims of the settlers having failed, it was with a view to the relief of persons who made settlement, entry, and improvement of these lands that the act of February 26, 1904, was passed.

That act authorized and directed the Secretary of the Interior to make a very extensive investigation to determine what claimants there are, the reasonable value of the lands settled upon, the dates of the settlements, and the value of the improvements of the several classes at the several dates named.

Instructions have been prepared and transmitted to the local land officers, and a special agent, who has been detailed to make the investigation, for their guidance in collecting the information desired by Congress.

Instructions under the act of April 19, 1904 (33 Stat., 184), "for the relief of certain settlers upon Wisconsin Central Railroad and The Dalles Military Road land grants," were prepared, approved by the Department, and issued.

This act directed that certain persons who settled upon and improved lands in Wisconsin within the conflicting limits of the grants to the Chicago, St. Paul, Minneapolis and Omaha Railway and the Wisconsin Central Railroad grants, and the lands in Oregon above described, be given credit for the period of their bona fide residence upon, and the amount of their improvements made on the lands for which they were unable to complete title, when making proof on homestead entries of other lands; but it is not believed that the settlers on The Dalles Military Road lands will seek the benefits of this act, in view of the legislation contemplated by the act of February 26, 1904 (supra).

RIGHTS OF WAY.

By the act of March 3, 1875 (18 Stat., 482), Congress granted to railroads upon certain conditions right of way through the public lands.

Rights of way for railroads, wagon roads, and tramroads in Alaska were granted upon certain conditions by the act of May 14, 1898 (30 Stat., 409).

Under the provisions of these acts and special acts, 664 companies have filed articles of incorporation which have been accepted, 34 of which were accepted during the fiscal year ended June 30, 1904. Right of way has been approved to 615 companies, 20 of which received their first approval during the same period.

There were received during the year 509 maps of locations of railroads, which, with those already pending, made a total of 628 maps on hand for action during the year; of these, 172 have been approved, 30 have been filed (not requiring approval), and 397 have been otherwise

disposed of, 21 of which were rejected, the rest having been returned for correction, leaving 33 awaiting action June 30, 1904.

Under sections 18 to 21 of the act of March 3, 1891, as amended by section 2, act of May 11, 1898, rights of way have been approved to 579 companies, individuals, and associations of individuals, of which 138 received their first approval during the past year.

There were received during the year 464 maps, which, with those already pending, made a total of 561 maps on hand for action during the year; of these, 151 have been approved, 20 have been filed (not requiring approval), and 288 have been otherwise disposed of, a few of which were rejected, the rest being returned for correction, leaving 102 awaiting action June 30, 1904.

Under the act of February 15, 1901, authorizing the Secretary of the Interior to permit the use of rights of way through public lands, reservations, or national parks for telegraph and telephone lines, electrical and water plants, canals, reservoirs, etc., for the storage and conveyance of water, and all beneficial uses, applications have been approved for 33 companies, individuals, and associations of individuals. Twenty eight maps filed under the provisions of this act were pending July 1, 1903; 56 maps were received during the year, of which 33 were approved and 20 otherwise disposed of, most of the latter by returning for correction.

By the act of January 13, 1897, the construction of reservoirs for watering live stock upon unoccupied public lands, not mineral or otherwise reserved, is permitted upon certain conditions. There were pending under this act at the beginning of the year 4,073 declaratory statements; there were received during the year 858 new applications, making a total of 4,931 applications susceptible of being acted upon during the year. Of these, 2,459 were acted upon as follows: Canceled or relinquished, 1,986; held for rejection or amendment, 419; approved, 54. The foregoing number having been acted upon, there remained pending unacted upon on June 30, 1904, 2,472 applications of this character.

Under the provisions of the tramroad act of 1895, as amended by the act of 1898, applications for permission to use right of way have been approved to 12 companies, individuals, and associations of individuals, 2 of which received their first approval during the past year. There was received during the year under these acts 1 map, which, with those already pending, made a total of 3 maps on hand for action during the year; of these 2 were approved as aforesaid and 1 returned for correction (since which time it has not been refiled), thus clearing the docket of maps of this character.

By section 4, act of August 18, 1894 (28 Stat., 372–422), provision is made for the donation to each of the States in which there may be situated desert lands of not more than 1,000,000 acres of such lands as the State may cause to be irrigated, reclaimed, occupied, and cultivated by actual settlers. This act has been amended by a provision of the act of May 11, 1896, to the effect that a lien is authorized to be created by the State upon the lands segregated, and that when an ample supply of water is actually furnished to any tract or tracts thereof, patent shall issue to the State for the same without regard to settlement or irrigation; and a further amendment by section 2, act of March 3, 1901 (31 Stat., 1133–1188), by which it is provided that the time for the reclamation of the lands in each list shall be ten years

from the date of its approval. If the land shall not be irrigated and reclaimed in that time, the Secretary of the Interior may continue the segregation of the land for a period not exceeding five years, or he may restore such lands to the public domain.

Lists have been filed by the States during the year, as follows:

	Acres.
State of Colorado, 1, covering	1,381.27
State of Oregon, 5, aggregating	17,783.60
State of Wyoming, 5, aggregating	86,019.63
State of Idado, 2, aggregating	111,130.77

Lists have been approved during the year, as follows:

	Acres.
State of Idaho, 2, aggregating	24,241.22
State of Montana, 1, covering	3,675.22
State of Oregon, 2, aggregating	28,284.83
State of Wyoming, 7, aggregating	236,986.93

Patents have been issued under said act during the year, as follows:

	Acres.
State of Montana, 1, covering	10,104.03
State of Wyoming, 3, aggregating	18,413.03

There have been relinquished, rejected, and otherwise disposed of lands in Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming aggregating 610,334.35 acres.

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United States and State Maps.

The completion and delivery of the 1902 United States map was prevented after the receipt of only 200 copies by the Baltimore fire, and on March 1, 1904, the lithographers were advised of their release from further liability under the contract. By act of Congress approved March 28, 1904, the unexpended balance under this contract was made available for the 1904 edition. Steps were immediately taken to hasten the completion of the 1903 edition, and about 3,000 copies of this map have been received up to June 30, 1904.

The work of bringing the copper-plate base of the United States map up to date for the 1904 edition is being pushed as rapidly as may be. Contract for lithographing 63,000 copies of the 1904 map, more or less, has been entered into with a Philadelphia firm, who have expressed their readiness to take up the work promptly, as soon as transfers are delivered to them, which will be in a few weeks. The contract for printing this edition provides that within five weeks after order is received to print, the first 10,000 copies are to be delivered; that four weeks shall be allowed for the delivery of the second and each succeeding 10,000 copies, and that the entire edition is to be completed within twenty-five weeks after the work of printing is begun.

The compilation of a map of Washington is well in hand; maps of Wyoming and Minnesota have been revised and partly recompiled, and are ready for final tracing; while a new map of Michigan is now ready for the lithographers, as soon as contract is entered into for the new fiscal year. New editions of Nevada, New Mexico, and Arizona have been received since June 30, 1903.

FOREST RESERVES.

Since June 30, 1903, nine additional forest reserves have been established under section 24 of the act of March 3, 1891 (26 Stat., 1095); one has been abolished (the Crow Creek Forest Reserve, in Wyoming); the areas of four have been somewhat reduced; two have been enlarged; and two have been consolidated, as follows: The Pine Mountain and Zaca Lake Forest Reserve and the Santa Ynez Forest Reserve, in the State of California, have been consolidated under the name of the Santa Barbara Forest Reserve. In effecting this consolidation an additional area consisting of a private land grant lying between the two reserves was included.

There are now 59 forest reserves, created by Presidential proclamation under said act of March 3, 1891, embracing 62,763,494 acres.

The total increase in the area of forest reserves since June 30, 1903, is 408,529 acres.

The work in this Office connected with the extension of forest-reserve area and the adjustment of boundaries of existing reserves has now reached the stage where most careful deliberation is demanded, the most urgent need for establishing such reserves having been met. Both the importance of the objects to be accomplished by the reserves and the many local interests to be considered necessitate great care in proceeding further in this direction. The Government can well afford, at this juncture, to delay action in establishing additional reserves until the force of forest experts now engaged upon the work can, by practical field examinations and the necessary scientific research, establish beyond reasonable doubt in what localities and to what exent further areas should be set apart for this purpose.

LANDS RELEASED FROM TEMPORARY WITHDRAWAL.

The delay in determining what further reserves will be ultimately proclaimed has necessitated holding extensive areas temporarily withdrawn, in order to prevent speculative appropriation of the lands in advance of the creation of the reserves. As rapidly as the reserves are finally established these withdrawals are revoked as regards all lands not included therein. From June 30, 1903, to October 1, 1904, 3,632,500 acres were restored to the public domain and thrown open to settlement and entry. By virtue of the authority vested in the Land Department and in accordance with an opinion of the Assistant Attorney-General for the Interior Department, all lands of this character are now thrown open to settlement as soon as restored to the public domain, but are not open to entry or selection until after notice to that effect has been published for sixty days.

ENTRY OF AGRICULTURAL LANDS WITHIN FOREST RESERVES.

In the preliminary report by the Commission on the Public Lands attention was drawn to the importance of having all the land within the borders of forest reserves put to the best use, in consequence of which it was recommended that such lands be opened to agricultural entry, under suitable restrictions and limitations prescribed by law.

A bill (H. R. 13631), prepared in accordance with this recommendation, was introduced in Congress on March 8 last, but failed of action.

In view of the importance of this measure, its enactment into law is greatly to be desired, and I accordingly urgently recommend the passage of the bill.

FOREST RESERVE FORCE.

The practical work of patrolling the reserves, and managing the many and varied interests connected with the administration of the same, has progressed satisfactorily, as far as the means at command for such work admitted. Following the usual policy, the force was expanded to its utmost during the danger or fire season, and correspondingly reduced when that had passed. As the result as many as 484 rangers were placed in the field when most needed to protect certain of the reserves. The smallest number employed at any time during the year was 200.

STOCK GRAZING IN FOREST RESERVES.

All that was said in my last annual report relative to grazing in forest reserves applies with equal force at the present time. Owing to the enlargement of some of the reserves, and the creation of new ones during the past year, there has been an increase in the total number of both sheep and cattle and horses allowed to graze in the reserves and in the number of permits issued.

There are now 57 reserves, exclusive of the Afognak and Alexander Archipelago reserves in Alaska, containing an area of 57,853,614 acres. There have been issued 843 permits to graze 1,806,722 head of sheep in 20 of these reserves, and 5,822 permits to graze 610,091 head of cattle and horses in 48 of them.

In addition, 16 conditional permits have been issued to graze 38,100 head of sheep in the Washington Forest Reserve, to be delivered only in case the grazing areas desired are found by the forest superintendent to be as represented by the sheep owners.

The following table shows the total permits and stock for each of the years 1901 to 1904, inclusive, and the tables under the business statement of my report show the details for each reserve:

Year.	Number of reserve.	Area in reserves (exclusive of Alaska.)	Cattle and horses.			Sheep.			Total permits.
			Reserves open to.	Permits.	Stock.	Reserves open to.	Permits.	Stock.	
1901	40	46,006,569	32	1,926	277,621	8	391	1,214,418	2,317
1902	52	55,265,885	37	2,642	357,552	8	484	1,151,513	3,126
1903	53	57,445,085	44	4,121	529,973	14	433	1,432,567	4,554
1904	57	57,853,614	48	5,822	610,091	20	843	1,806,722	6,665

In addition to the above, the cattle and horses that grazed last season on the lands now in the Baker City Forest Reserve in Oregon are allowed to graze in the reserve informally during the season of 1904, but all sheep are prohibited; and in the Salt Lake City reserves in Utah all the stock that grazed on the lands last season are allowed in the reserves informally during the season of 1904, but thereafter sheep will be prohibited.

The Department issued six permits, under paragraph 22 of the circular of May 22, 1903, allowing 16,100 head of sheep to cross the

reserve lands to reach 42,608 acres of private lands within the Sierra Forest Reserve.

There have also been issued by the forest officers quite a large number of permits, under paragraph 23 of said circular, allowing stock, principally sheep, to cross certain reserves to reach shipping points or grazing grounds outside of the reserves, from four to fifteen days being allowed each band of sheep to make the crossing. These crossings usually occur twice a year, the stock going one way early in the season and back again in the fall. In some instances, however, they go but one way to reach some shipping point. I have, therefore, divided these crossings into two periods, one from July 1 to December 31, 1903, and the other from January 1 to June 30, 1904. The following table shows these crossings for each reserve:

Sheep crossing permits.

Reserve.	July 1 to December 31, 1903.		January 1 to June 30, 1904.	
	Permits.	Sheep.	Permits.	Sheep.
Black Mesa, Ariz	52	185,965	57	178,950
San Francisco Mountains, Ariz	19	59,800	8	42,150
Lake Tahoe, Cal			2	6,300
Stanislaus, Cal	12	30,580	23	72,640
Sierra, Cal	30	79,400	30	83,600
Madison, Mont			1	1,800
Gila River, N. Mex			1	1,900
Cascade Range, Oreg	3	9,600		
Mount Rainier, Wash	1	5,700		
Big Horn, Wyo	32	160,630		
Total	149	531,675	122	387,440

At the second session of the Fifty-eighth Congress there was introduced H. R. 6480 (Report No. 1148) "A bill to control grazing in forest reserves" as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That every person who knowingly pastures or causes to be pastured any live stock upon public lands of the United States situated within a forest reserve without first having obtained a permit so to do under rules and regulations prescribed by the Secretary of the Interior shall, upon conviction, be punished by a fine not to exceed one thousand dollars, or by imprisonment for not longer than one year, or by both such fine and imprisonment.

The reasons making desirable the passage of this bill were set forth in my last annual report, and I now again recommend that the Congress be requested to pass it.

FIRES IN THE FOREST RESERVES.

The eleven reserves in Arizona and New Mexico and the San Bernardino, San Gabriel, Santa Barbara, San Jacinto, and Trabuco Canyon in southern California are designated the southern reserves, and all others as the northern reserves. One year with another about 6 per cent of the fires in the southern reserves occur in the first quarter of the calendar year, 32 per cent in the second quarter, 48 per cent in the third quarter, and 18 per cent in the last quarter. In the northern reserves 0.25 per cent of the fires occur in the first quarter, 8 per cent in the second quarter, 84 per cent in the third, and 7.75 in the fourth quarter.

During the fiscal year ended June 30, 1904, there were extinguished 231 fires which had passed the incipient stage when discovered. The area burned over before the fires were put out aggregated 112,817 acres, and the cost of extinguishing them, exclusive of the salaries of the forest-reserve employees, was $4,127. This is a decrease from the prior year of 48 in this class of fires, a decrease in the area burned over of 166,917 acres, and a decrease in the extra cost of $2,036. The large decrease in the area burned over is partly accounted for by the fact that a large fire in the Mount Rainier Reserve in Washington in September, 1902 (fiscal year, 1903), burned over 129,018 acres.

A report by quarters for the calendar year is probably a more satisfactory showing than one for the fiscal year. Under the business statement of my report will be found a table showing the number of fires which had passed the incipient stage when discovered, and the area burned over for each reserve by quarters of the calendar year 1903 and the first half of the year 1904.

AUTHORITY TO MAKE ARRESTS.

In regard to the bills heretofore recommended by this Department, and successively introduced in the Fifty-sixth, Fifty-seventh, and Fifty-eighth Congresses, to confer authority upon forest officers to make arrests for violation of the laws and regulations relating to forest reserves, it is a matter for serious regret that as yet no legislation has been secured on the subject.

A bill for this purpose was introduced in the House at the last session of Congress (H. R. 7296), received favorable action by that body, and is now before the Senate.

The management of the reserves is so hampered by the want of such authority that the passage of this bill is greatly desired by this Office.

FREE USE OF TIMBER.

The people are rapidly coming to understand the free-use permit system in procuring timber needed for individual use of settlers, miners, prospectors, and residents, for firewood, fencing, building, mining, prospecting, and other domestic purposes, and the number who take advantage of the privilege is rapidly increasing.

There has been some dissatisfaction expressed because of delays in securing these permits, but in almost all cases this has been found to be the fault of the applicant rather than of the forest officers, due to the fact that the applications are not sent in until the timber is wanted, and then the stormy season sets in or the harvest time has come on before the work can be completed.

The quarterly reports of the forest officers show 3,265 applications submitted, while but 2,224 applications were reported for the preceding fiscal year.

The applications were for the removal of both living and dead timber to the amount of 5,764,683 feet B. M. and 53,569 cords.

The amount of dead timber allowed during the year was in excess of the amount of living timber allowed to be taken under the free-use provisions of law. Areas of dead timber are allotted to the free-use applicants in small tracts, which they are required to clear up

thoroughly. This and much green timber wastefully cut in former years and now utilized under the free-use system has been removed, to the great benefit of the forest reserves.

SALES OF TIMBER WITHIN FOREST RESERVES.

Three hundred and seventy petitions for sale of timber from lands in the forest reserves have been presented, involving 69,257,710 feet of timber B. M. and 87,032 cords of wood.

One hundred and eighteen petitions were pending before the Office at the date of last report.

Three hundred and seventy-seven sales have been effected and of the proceeds of such sales and amounts received on previous sales in which there were deferred payments, there has been realized and paid into the Treasury $58,436.19, and a very considerable amount arising from such sales is held in the hands of receivers of public moneys at the several United States land offices, as unofficial moneys pending approval of agreements and other necessary proceedings in several cases.

Twenty cases have been refused or abandoned by petitioners for various reasons, and 91 petitions are pending necessary official action or the compliance of petitioners with Department orders relative thereto.

The timber sought and sold has been largely dead, or, as in the case of the Black Hills Forest Reserve, so seriously affected by insects as to make its early destruction certain, as well as to seriously imperil the surrounding timber not so affected, and every effort has been made to clear the reserves of dead and insect-infested timber wherever located. Very general success has attended such efforts and the use of such timber has been accepted by consumers in all cases where it could be made available, and while the prices realized for this class of timber have not been large, it will be observed that the results show a very considerable increase in receipts over any previous year's business.

Little difficulty has been experienced in inducing economical use of timber, and in securing a suitable clearing up of the cut-over areas, so indispensable to the future welfare of the reserves, and it may be said that the improvement in conditions has been so marked as to be very satisfactory.

SAWMILLS IN FOREST RESERVES.

The policy of recommending the granting of permits for the installation of sawmills in the reserves where the conditions seemed to demand such action has been persisted in, and a considerable number of such permits have been issued to persons of undoubted character and responsibility under such restrictions as appeared to be demanded by the conditions.

The results have justified such action.

So far as known, not one case has resulted unfortunately, but, on the contrary, the practice of locating such mills near the cutting area in sale cases has tended to promote a more economical use of timber, better facilities for supplying the products to the consumer, and a more satisfactory understanding with all concerned. It may be said in addition that this practice has resulted in more careful methods in the management and control of fires, and has furnished a corps of trained assistants in cases where fires have attained proportions beyond the control of the forest officers.

EXPORT OF FOREST RESERVE TIMBER ACROSS THE STATE LINE.

In my report last year it was pointed out that the requirement in the act of June 4, 1897 (30 Stat., 34–36), that all timber procured from forest reserves must be used in the State or Territory in which the reserve lies needs to be modified. Report to that effect, recommending that, while leaving the restriction operative in general, the Secretary of the Interior be given discretionary powers in exceptional cases, was made to the Department by this Office on December 28, 1901, submitting the draft of a bill which, upon your recommendation, was subsequently introduced as H. R. 9202 (Fifty-seventh Congress, first session), and was favorably reported upon, with a slight amendment, by the Public Lands Committee of the House. As so amended it was introduced in the Senate at the next session of Congress, but failed of passage. On February 26 last it was again introduced as H. R. 13095 (Fifty-eighth Congress, second session), but was not acted upon.

In the reports upon this bill above referred to the importance of its passage has been urged upon the ground that the practical operation of the forest reserve administration act of June 4, 1897, has clearly shown that, while the limitation in question is undoubtedly advisable on the whole, yet it has resulted in many instances in working serious hardship, especially in cases in which forest reserves contain the natural sources of timber supply for persons living on prairie lands across the State line. In such cases the effect of the limitation is to deprive the people of timber.

Again, it has been shown that the practical working of this restriction in the timbered districts of Washington, Oregon, California and Idaho results in much of the timber being left to waste, since there is not a sufficient demand in the local market in each State to utilize all of it.

The failure to modify this restriction in the manner proposed in the bill now before Congress causes such serious embarrassment in administering certain of the reserves that it is to be hoped that the bill will be enacted into law at the coming session of Congress.

REVENUE FROM SALE OF TIMBER AND OTHER MATERIAL AND RENTING OR LEASING LANDS WITHIN FOREST RESERVES.

Under the present laws the only resources on forest reserves which may be utilized by the Government for a money consideration are the timber thereon and mineral and other springs; the sale of forest reserve timber being provided for in the acts of June 4, 1897 (30 Stat., 35), and June 6, 1900 (31 Stat., 661), and the leasing of springs in forest reserves being authorized by the act of February 28, 1899 (30 Stat., 908).

Already the beneficial results from authorizing sales of timber within the reserves have fully demonstrated the advisability of such legislation, the receipts from sales made in the reserve in which a system of timber sales is now well under way (the Black Hills Forest Reserve in South Dakota) having produced, during each of the last three years, a revenue in excess of the total outlay for the administration of the reserve.

The use of timber is, however, only one of the privileges which form a proper source of revenue in administering the reserves. Of as great

importance in certain localities is that of grazing. The revenue that should be derived from a reasonable charge for grazing within certain of the reserves would be in proportion to the magnitude of the great wool industry in those localities; and there certainly appears to be no good and sufficient reason for allowing that industry use of the herbage within the reserves free of charge while requiring that the lumber trade shall pay for its supplies drawn from the same source.

There are also now numerous sawmills, hotels, road ranches, summer resorts, stores, and other establishments within the reserves, all of which should pay a small charge each year for the privileges granted of so occupying and using forest reserve lands.

Under such management it would not be long before the reserves would become more than self-supporting. Yearly appropriations for their care would cease to be necessary. It accordingly appears advisable that Congress should take the proper action to this end at an early date.

In considering legislation on this subject, I deem it well to call attention to the fact that so far all money received from forest reserves has been paid into the Treasury of the United States, where it ceases to be available for reserve work without a special appropriation by Congress.

That a change from this policy is desirable is evident, and was fully recognized in the above-mentioned act of February 28, 1899, which provides, in the matter of leasing mineral and other springs, as follows:

> That all funds arising from the privileges granted hereunder shall be covered into the Treasury of the United States as a special fund to be expended in the care of public forest reservations.

Similar provision should be made in all further legislation of this kind.

In addition, it is desirable that the States and Territories in which these reserves are located should have a certain money interest in the management of such reserves; and it is believed that this could be best accomplished by having a certain portion (25 per cent) of the net income from each reserve go to the State or Territory in which it is situated.

This provision would do much, it is believed, to win the good will and enlist the co-operation of the people where the reserves are located, and thus would aid materially in the administration and care of the reserves. The people would have an interest in the protection of the timber and range which would greatly assist the field force.

As meeting all of the desired ends, I wish to invite attention to the bill, drafted in this office, which was introduced in the Fifty-seventh Congress, in both the House and Senate, but failed of action; and which was subsequently reintroduced in the last session of Congress as H. R. 7295 (Fifty-eighth Congress, second session).

In view of the importance of this measure I recommend that this pending bill receive favorable consideration at the coming session of Congress.

MISCELLANEOUS PRIVILEGES.

Applications to be allowed the occupancy and use of forest reserve lands for various special privileges have exceeded by about two-thirds the number filed during the preceding fiscal year, and with four exceptions they pertain to the old forest reserves existing at the date of the

last annual report. As against the 166 applications then reported as having been received and considered, 226 have been filed during the past fiscal year. Of these more than one-half have been submitted to the Department with recommendation for favorable action in most cases. Upon departmental instructions returned, permit has been granted on one-half of the applications filed and one-seventh have been rejected.

A large number of the remaining portion of the applications filed have been returned to the forest officer for amendment or supplemental report required before they could be properly submitted for departmental action. About one-sixth of the applications received are awaiting action by this office.

The applications rejected have been mainly those seeking fencing privileges prohibited by the statute, or applications for irrigation and telephone right of way erroneously submitted under the law applicable in the cases. In the latter class the rejection was, therefore, not an actual denial of the privilege sought, but a notice to the applicants of the statutory requirements in procuring the desired franchise.

The rejected applications also embrace requests made for permission to conduct road houses for which there was no real or great demand from the traveling public, and to establish road houses, hotels, and stores with saloons, which latter feature is disallowed in the interests of proper forest reserve administration. No applications have been refused wherein the privilege sought was deemed essential to the development of legitimate mining enterprises, or to the well-being of the settler and home maker, and at the same time shown not to be detrimental to forest reserve interests.

* * * * * * *

PRESERVATION OF GAME AND FISH.

In my last report I recommended that the attention of Congress be called to the need for a Federal statute that would tend to harmonize State legislation upon the subject of protection of game and fish within the several Federal forest reserves, without creating a divided jurisdiction over such reserves, and which would not encroach upon the proprietary rights of the States to control the game and fish within their respective boundaries.

The bill (H. R. 8135) subsequently introduced in Congress for the protection of game and fish in the forest reserves of the United States is in line with this suggestion. It is, accordingly, to be hoped that it will be enacted into law at the next session of Congress.

TRANSFER OF FOREST RESERVES TO THE DEPARTMENT OF AGRICULTURE.

I desire to renew the recommendation heretofore made by this office that the work connected with the administration of forest reserves be transferred to the Bureau of Forestry, in the Department of Agriculture.

The advisability of this action becomes more apparent as the work of administering the reserves progresses, as development of the service is clearly retarded by the present distribution of the work among different bureaus in two Departments. It is plainly not prac-

ticable to attain the best results under such conditions. If the application of scientific methods to the numerous forest problems arising in connection with the various industries affected by the reserves is to be properly undertaken and carried forward, it is essential to consolidate all the features of the work in one bureau, equipped with officers who have had the special scientific and practical training needed for the work.

With the intent of devising a scientific system of forestry adapted to meet the peculiar needs of this country, the Government has set apart considerably over fifty millions of acres of land for that purpose, and is now confronted with the task of working out the many problems involved in establishing such a system. The work is proving to be one of great magnitude, such industries as agriculture, grazing, mining, lumbering, transportation, manufactures, and commerce, in general, having a most intimate and dependent relation to it, as has been pointed out by President Roosevelt, in connection with expressing the opinion that "The forest problem is in many ways the most vital internal problem of the United States."

Plainly, work recognized as involving interests of such magnitude should be intrusted to a branch of the Government which can command the expert talent needed to cope with the intricacies and difficulties of the problems involved.

It is needless to state that the General Land Office is neither organized nor equipped for such work. The utmost that can be done in this office beyond handling matters pertaining to titles to the lands is to conduct the work incident to the establishment and policing of the reserves, and to regulate their occupancy and use, to a limited degree, along practical lines. The application of scientific methods in the development of a system of national forestry is altogether outside of and beyond its scope.

I, therefore, most earnestly desire to see this work placed by Congress in the charge of a scientific branch of the Government, in which it can be expanded properly along the lines essential to its success.

Public Lands Commission.

Under date of October 22, 1903, the President appointed a Commission on the Public Lands to report to him upon the condition, operation, and effect of the present land laws, and the use, condition, and disposal of the public lands. This commission consists of W. A. Richards, chairman, F. H. Newell, and Glifford Pinchot. The commission was authorized and directed by the President to avail itself of all means of information in the Executive Departments, and, especially, in the General and local land offices, the reclamation service, and the Bureau of Forestry. The commission was directed to report either in whole or in part as early as the importance and extent of the questions to be considered would permit, and in any event not later than December 1, 1904.

The commission has held numerous meetings in this city and a number of clerks and special agents from the General Land Office have been and are now engaged in making investigations in the field and compiling statistics for the use of the commission. In several cities in the public land States public meetings for the purpose of discussing

the operation of the land laws have been participated in by the commission. On March 7, 1904, a partial report of the commission was made to the President and by him submitted to Congress, where it is now under consideration.

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National Parks.

PROPOSED PETRIFIED FOREST NATIONAL PARK, ARIZONA.

The bill, which was passed by the House of Representatives in both the Fifty-sixth and Fifty-seventh Congresses, for the protection of the region containing what is known as the Petrified Forest, in the Territory of Arizona, was reintroduced in the first session of the Fifty-eighth Congress as H. R. 2529, and was again passed by the House with certain amendments.

In view of the well-known importance of securing efficient protection for the natural wonders of this region, I hope that this bill, which, as shown, has already been passed by the House of Representatives in no less than three successive Congresses, may not fail to receive favorable action by the Senate at its approaching session.

PROPOSED PAJARITO CLIFF DWELLERS' NATIONAL PARK, NEW MEXICO.

In reference to the matter of pending legislation to establish the proposed Pajarito Cliff Dwellers' National Park, in the Territory of New Mexico, containing extensive cliff dwellers' ruins, this office, on February 25, 1904, transmitted to the Department a copy of a report, received through the Department of Agriculture, by Mr. S. J. Holsinger, of the Bureau of Forestry, in that Department, submitting the result of a recently made investigation of the region; from which it appeared that a national park established with boundaries as proposed in the bill pending in Congress, viz, H. R. 7269 (Fifty-eighth Congress, Second session), slightly amended, would include the most important of the ruins, without in any manner conflicting with other interests, public or private.

In view of this showing of facts, it was suggested that the copy of Mr. Holsinger's report upon the matter be transmitted to Congress, with the recommendation that the pending bill, viz, H. R. 7269, be amended as suggested by Mr. Holsinger.

As the bill is still pending, I desire to renew this recommendation, and respectfully urge that, as so amended, it be passed at the coming session of Congress.

PROPOSED MESA VERDE NATIONAL PARK, COLORADO.

It is of record in this Office that the finest specimens of true cliff dwellings in this country are to be found in the Mesa Verde region, in the extreme southwestern corner of the State of Colorado. This region has the distinction of containing what is known as "Cliff Palace," which is considered one of the most famous works of prehistoric man in existence.

A bill to establish a national park containing a portion of these valuable ruins was introduced in the Fifty-sixth Congress, second session, as H. R. 14262; which has since been reintroduced as H. R. 6270 and

S. 7461 (Fifty-seventh Congress, first session), and H. R. 6784 (Fifty-eighth Congress, second session). This latter bill is still pending.

On February 25, 1904, this Office made report thereon to the Department, and submitted a draft of a new bill and recommended that the same be introduced in Congress as a substitute for said bill H. R. 6784.

In view of the undoubted importance of preserving objects of such interest to science as are known to exist in this region, I renew the recommendation made in said report from this Office of February 25 last.

As this is only one of numerous tracts containing ruins of former cliff dwellings, I respectfully suggest that in introducing this new bill the name of the proposed park be changed from the "Colorado Cliff Dwellings National Park," which lacks sufficient definiteness, to the "Mesa Verde National Park," which would specifically indicate, under a well-known local designation, the particular locality set apart.

ESTABLISHMENT OF NATIONAL PARKS.

This Office has repeatedly drawn attention to the need for action on the part of Congress in respect to making provision for the proper care of those portions of the public lands which, for their scenic beauty, natural wonders or curiosities, ancient ruins or relics, or other objects of scientific or historic interest, or springs of medicinal or other properties, it is desirable to protect and utilize in the interest of the public.

The policy of the Government in reserving from appropriation of all kind and setting apart, in the interest of science and for the benefit of the public at large, regions containing objects of such general interest as the Yellowstone, Yosemite, Sequoia, Crater Lake, and other national parks, should undoubtedly be extended to include other world wonders discovered within the limits of the public domain. The mention of such wonders as the Grand Canyon and the Petrified Forest in Arizona, the Big Trees in California, the recently discovered Natural Bridges in Utah, and also the interesting ruins of prehistoric races scattered throughout portions of the southwest, is sufficient argument in favor of such action.

It is clearly the duty of the Government to protect these objects from appropriation under the various public land laws, and also to preserve them from spoliation and injury of all kinds. Upon this point there appears to be no room for doubt. The only question at this time is as to the course to be pursued in doing so. Heretofore it has been the policy of the Government to make each case the subject of a special act of Congress.

This course, however, has proved to be far from satisfactory, owing to the manifold delays to which measures of this nature are subject. The failure to secure legislation, though urgently pressed in successive sessions of Congress, to protect such localities as the Petrified Forest in Arizona and the Pajarito and Mesa Verde Cliff Dwellers' regions in New Mexico and Colorado has sufficiently proved the futility of attempting to accomplish, by means of a special act of Congress in each instance, the protection of all the localities throughout the public domain requiring such action.

The number of such cases now known to this office makes it evident that the time has come for some general enactment on the subject

which shall enable action to be taken promptly, in each instance, as the cases arise from time to time.

This, it seems, can best be done by Congress empowering the President to set apart, as national parks, all tracts of public land which, for any of the reasons above stated, it is desirable to protect. A bill to this end has been urged by this office for some years. As drafted and laid before the Department on March 29, 1900, it was introduced in the Fifty-sixth Congress and subsequently reintroduced at the last session of Congress as House bill 13478, but as yet it has received no action.

Recently the great necessity which exists for this Department to be placed in a position to provide proper care and service for portions of the public domain containing objects of interest to scientists, has been forcibly brought to my attention by the receipt of documents, prepared by Prof. Edgar L. Hewett, formerly president of the New Mexico Normal University, at Las Vegas, N. Mex., presenting a comprehensive and detailed statement regarding the prehistoric ruins in Arizona, New Mexico, Colorado, and Utah, and urging immediate and effective measures on the part of the Government for their preservation.

These papers contain so much valuable information of a specific nature regarding the distribution and great seats of culture of the prehistoric tribes of the Southwest, with such admirable suggestions respecting required action for the preservation and utilization of the ruins, that I have appended the same in full to this report. (See Appendix.)

The information furnished in these documents leaves no room to doubt that immediate measures should be taken to preserve these interesting ruins. I have, accordingly, included in my annual estimates for this office, a recommendation for an appropriation of not less than $10,000 for their care and custody.

In addition to such action, Professor Hewett clearly sets forth the need for general legislation authorizing the setting apart, as national parks, such of these regions as are of leading importance, and providing for their proper exploration.

In doing so he advocates the passage, with certain amendments, of the above-mentioned Department bill, viz, H. R. 13478 (Fifty-eighth Congress, second session), in regard to which he states as follows:

> I should favor, and I believe the scientists and the country at large will favor, a simple measure authorizing the creation of national parks, as mentioned above, the creation of the small reservations for the protection of the few isolated ruins, or small groups of ruins, that demand permanent protection, and the establishment of a system of supervision of all ruins on the public domain and Indian reservations by the Department of the Interior, all details of which should be left in the hands of the Secretary of the Interior to develop, as information and experience direct. It seems to me that one section added to H. R. 13478, known as the Lacey Bill, providing for the protection and utilization of ruins not included in such national parks as may be created under that act, would make it perfectly adequate to cover every condition expressed above, and entirely satisfactory to all concerned.

I concur in Professor Hewett's suggestion, and accordingly recommend that the bill be amended to meet his views, as follows:

A BILL to establish and administer national parks, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States may, from time to time, set apart and reserve tracts of public land, which, for their scenic beauty, natural wonders or curiosities, ancient ruins or relics, or other objects of scientific or

historic interest, or springs of medicinal or other properties, it is desirable to protect and utilize in the interest of the public; and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof.

SEC. 2. That such reservations shall be known as national parks, and shall be under the exclusive control of the Secretary of the Interior, who is hereby empowered to prescribe such rules and regulations and establish such service as he shall deem necessary for the care and management of the same. Such regulations shall provide specially for the preservation from injury or spoliation of any and all objects therein of interest or value to science or history.

SEC. 3. That the Secretary of the Interior be, and is hereby, authorized to permit examinations, excavations, and the gathering of objects of interest within such parks by any person or persons whom he may deem properly qualified to conduct such examinations, excavations, or gatherings, subject to such rules and regulations as he may prescribe: *Provided*, That the examinations, excavations, and gatherings are undertaken for the benefit of the Smithsonian Institution, or of some reputable museum, university, college, or other recognized scientific or educational institution, with a view to increasing the knowledge of such objects.

SEC. 4. That the Secretary of the Interior be, and is hereby, authorized, in the exercise of his discretion, to rent or lease, under rules and regulations to be made by him, pieces or parcels of ground within such parks for the erection of such buildings as may be required for the accommodation of visitors.

SEC. 5. That all funds arising from the privileges granted hereunder shall be covered into the Treasury of the United States as a special fund to be expended in the care of such parks.

SEC. 6. That all natural wonders or curiosities, ancient ruins or relics, or other objects of scientific or historic interest, or springs of medicinal or other properties, on such of the public lands as are not set apart as national parks, under the provisions of this act, are hereby declared to be under the care and custody of the Secretary of the Interior, whose duty it shall be to protect and preserve the same from unauthorized injury or waste, in any form whatsoever, so long as shall be necessary in the interest of the furtherance of knowledge of any of such objects, or for the utilization thereof, and the Secretary of the Interior is hereby empowered to prescribe such rules and regulations and establish such service as he shall deem necessary for the care and management of the same, and he is hereby authorized to permit examinations, excavations, and the gathering of objects of interest on such lands, in the same manner and for the same purposes as in the case of national parks established under the provisions of this act.

SEC. 7. That all persons who shall unlawfully intrude upon such parks, or who shall without permission appropriate, injure, or destroy any game, fish, timber, or other public property therein, or injure or destroy any caves, ruins, or other works or relics therein, or commit unauthorized injury or waste, in any form whatsoever, upon the lands or other public property therein, or upon any of the lands or objects referred to in section six of this act, or who shall violate any of the rules and regulations prescribed hereunder, shall, upon conviction, be fined in a sum not less than fifty dollars nor more than five thousand dollars, or be imprisoned for a period not less than fifteen days nor more than twelve months, or shall suffer both fine and imprisonment, in the discretion of the court.

As so amended, it is desirable that this bill be passed as a substitute for all other bills now pending on the subject.

Respectfully submitted.

W. A. RICHARDS,
Commissioner.

The SECRETARY OF THE INTERIOR

REPORT OF THE COMMISSIONER OF PATENTS.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 13, 1904.

SIR: In compliance with your request I beg to submit herewith the following report of the business of the United States Patent Office for the fiscal year ended June 30, 1904:

Applications and caveats received.

Applications for patents for inventions	50,321
Applications for patents for designs	823
Applications for reissues of patents	142
Applications for registration of trade-marks	2,554
Applications for registration of labels	1,297
Applications for registration of prints	331
Caveats	1,746
Disclaimers	9
Appeals on the merits	1,008
Total	58,231

Applications awaiting action.

Applications awaiting action on the part of the Office July 1, 1904	13,069

Applications for patents, including reissues, designs, trade-marks, labels, and prints.

June 30, 1895	41,014	June 30, 1900	45,270
1896	45,645	1901	48,075
1897	47,747	1902	51,258
1898	44,216	1903	54,256
1899	40,320	1904	55,468

Applications awaiting action on the part of the Office.

June 30, 1895	4,927	June 30, 1900	3,564
1896	8,943	1901	7,683
1897	12,241	1902	11,042
1898	12,187	1903	9,842
1899	2,989	1904	13,069

Patents withheld and patents expired.

Letters patent withheld for nonpayment of final fees	5,499
Letters patent expired	20,966
Applications allowed, awaiting payment of final fees	10,308

Patents granted and trade-marks, labels, and prints registered.

Class.	1900.	1901.	1902.	1903.	1904.
Letters patent	24,777	24,593	26,031	29,329	31,257
Design patents	1,780	1,808	1,268	438	613
Reissue patents	83	80	88	125	109
Trade-marks	1,660	1,826	1,864	2,194	2,213
Labels	682	824	750	910	1,044
Prints	93	124	163	233	257
Total	29,075	29,255	30,164	33,229	35,493

Expenditures.

	Expended.	Estimated liabilities.	Total.
Salaries	$880,787.35		$880,787.35
Scientific library	1,845.89	$154.11	2,000.00
Postage on foreign matter	2,443.00		2,443.00
Stationery	12,113.23		12,113.23
Furniture	3,998.83		3,998.83
Carpets, linoleum, and matting	3,224.80		3,224.80
Ice	470.36		470.36
Telephones	1,400.00		1,400.00
Washing towels	252.43		252.43
Sundries	4,328.49		4,328.49
Law library	413.45		413.45
Official Gazette, illustrations, paid contractor	84,162.50		84,162.50
Photolithographing, paid contractor	124,155.77		124,155.77
Photographic printing, paid contractor	5,844.20		5,844.20
Printing and binding:			
Paid Public Printer for producing Official Gazette and indexes out of appropriation for 1904	94,296.12	1,564.75	95,860.87
Printing specifications	267,099.75		267,099.75
Miscellaneous printing and binding	29,819.37		29,819.37
International Convention for Protection of Industrial Property		750.00	750.00
Total	1,466,655.54	2,468.86	1,469,124.40

Receipts and expenditures.

Receipts from all sources	$1,663,879.99
Expenditures (including total in all appropriations)	1,469,124.40
Surplus	194,755.59

Comparative statement.

June 30—	Receipts.	Expenditures.	June 30—	Receipts.	Expenditures.
1895	$1,195,557.07	$1,038,166.08	1900	$1,358,228.35	$1,247,827.58
1896	1,307,090.30	1,097,368.85	1901	1,408,877.67	1,288,970.13
1897	1,343,779.44	1,088,473.16	1902	1,491,538.85	1,329,924.63
1898	1,253,948.44	1,092,449.83	1903	1,591,251.04	1,423,094.40
1899	1,209,554.88	1,148,663.48	1904	1,663,879.99	1,469,124.40

Summarizing these tables, there were received in the last fiscal year 50,321 applications for mechanical patents, 823 applications for designs, 142 applications for reissues, 1,746 caveats, 2,554 applications for trade-marks, 1,297 applications for labels, and 331 applications for prints. There were 31,979 patents granted, including reissues and designs, and 2,213 trade-marks, 1,044 labels, and 257 prints were registered. The number of patents that expired was 20,966. The number of allowed applications which were by operation of law forfeited for nonpayment of the final fees was 5,499. The total receipts of the Office were $1,663,879.99; the total expenditures were $1,469,124.40, and the surplus of receipts over expenditures, being the amount turned into the Treasury, was $194,755.59.

The preceding tables will sufficiently show that the business of the Patent Office is growing rapidly, and the following comparison between the receipts, expenditures, applications filed, issues of the Office, the printed copies sold, copies of records furnished, and the number of employees for the years ending, respectively, June 30, 1899, and June 30, 1904, will illustrate this growth.

Class.	1899.	1904.	Increase.	Percentage of increase.
Receipts	$1,209,554.88	$1,663,879.99	$454,325.11	37.5
Expenditures	$1,148,663.48	$1,469,124.40	$320,460.92	27.8
Applications and caveats filed	41,930	57,214	15,284	36.4
Letters patent, design, and reissue patents granted; and trade-marks, labels, and prints registered	25,404	35,493	10,089	39.7
Printed copies of patents furnished	1,363,971	1,658,951	294,980	21.6
Price received	$49,681.37	$65,786.89	$16,105.52	32.4
Words written in copies of records furnished	13,899,700	21,358,600	7,458,900	53.6
Number of employees	668	722	54	8.0

The elements of the foregoing table are such as, in my opinion, index the development of the business of this Office during the last five years. It is to be noticed that the average rate of increase in these work elements is 35.5 per cent., and also that the increase in the number of employees who have performed this work has been but 8 per cent. I esteem it a duty to the officers and employees of this Bureau to call your attention to this fact. In my opinion, this increased work could not have been successfully performed by the use of the methods of work employed at the beginning of the period under consideration, nor with the standards of efficiency at that time found in this Office. The methods of work have been quietly, steadily, and in many ways changed, to the great improvement of the service, and standards of individual work have been raised to meet the increasing volume of work. In all of these matters the Government service has enjoyed the hearty cooperation of the officers and employees of this Bureau, and without such aid it would have been impossible to have accomplished these satisfactory results.

Among the concrete results accomplished I would mention that by the rearrangement of the copies of printed patents, together with judicious expenditure of the appropriation devoted to the reproduction of exhausted copies, many of the active classes have been filled in, or almost completed. This has caused such a marked decrease in the demand for reproduction of exhausted copies that all orders received are now rapidly filled.

The class of errors formerly known as Office errors in the photolithographic work, and formerly productive of expense to the Office, has been entirely eliminated.

The correspondence of the Office, amounting to 227,750 letters, exclusive of letters filed in caveats and applications for patents, has been transacted with such promptness that it has rarely been more than two days in arrears.

Orders for manuscript copies of records are currently filled at a rate of speed formerly reserved for orders made "special." This has been accomplished by the voluntary raising of the standards of work by the force occupied in this division.

Complaints of losses of office fees alleged to have been sent by mail have been reduced to an insignificant number, only 10 such complaints, aggregating $2.30, having been received out of a total number of 19,550 pieces received by ordinary mail and express, transmitting $10,293.29, and this small remainder is thought to consist entirely of complaints erroneously made.

Permit me to call your attention to the fact that the increase of work of this Bureau requires more space than that at present occupied by the Patent Office, and that some economy of time and work could be accomplished if the space allotted to this Office could be increased.

Respectfully submitted.

F. I. ALLEN,
Commissioner.

The SECRETARY OF THE INTERIOR.

REPORT OF THE COMMISSIONER OF PENSIONS.

DEPARTMENT OF THE INTERIOR,
BUREAU OF PENSIONS,
August 1, 1904.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

SIR: I have the honor to submit to you the following report of the Bureau of Pensions for the fiscal year ended June 30, 1904:

SEC. 1.—PENSIONERS—CLASSIFIED.

The number of pensioners upon the roll July 1, 1904, and for the four preceding years, respectively, was as follows:

Wars.	1904.	1903.	1902.	1901.	1900.
War, Revolutionary:					
Widows	1	2	4	4	4
Daughters	2	3	4	5	7
War of 1812:					
Survivors	1	1	1	1	1
Widows	918	1,115	1,317	1,527	1,742
Indian wars:					
Survivors	2,367	1,565	903	1,086	1,370
Widows	3,519	3,169	3,320	3,479	3,739
Mexican war:					
Survivors	5,214	5,964	6,828	7,568	8,352
Widows	7,821	7,910	8,017	8,109	8,151
Civil war:					
General laws—					
Army invalids	238,555	264,139	277,965	293,186	305,980
Army widows	84,218	86,866	87,046	86,504	88,463
Navy invalids	2,230	4,142	4,360	4,489	4,622
Navy widows	1,153	2,221	2,263	2,298	2,314
Army nurses	606	624	634	650	646
Act June 27, 1890—					
Army invalids	433,552	427,711	426,188	422,481	415,265
Army widows	161,383	155,249	148,201	138,490	129,412
Navy invalids	16,455	16,010	15,953	15,633	15,392
Navy widows	7,206	6,992	6,977	6,621	6,314
War with Spain:					
Army invalids	11,946	8,798	6,282	3,344	822
Army widows	4,187	3,488	2,727	1,981	845
Navy invalids	494	402	329	211	60
Navy widows	202	174	127	68	28
Regular establishment:					
Army invalids	7,816	.....	.....	.....	.....
Army widows	2,137	.....	.....	.....	.....
Navy invalids	1,685	.....	.....	.....	.....
Navy widows	1,094	.....	.....	.....	.....
Total	994,762	996,545	999,446	997,735	993,529

SEC. 2.—PENSIONERS, BY WARS.

The following table is a condensation of the foregoing section and shows the number of pensioners according to the wars and the increase and decrease from year to year:

Wars.	1904.	1903.	1902.	1901.	1900.
War of Revolution	3	5	8	9	11
War of 1812	919	1,116	1,318	1,528	1,743
Indian wars	5,886	4,734	4,223	4,565	5,109
Mexican war	13,035	13,874	14,845	15,677	16,503
Civil war:					
Invalids	690,792	702,832	724,466	735,139	741,259
Widows	253,960	248,390	244,487	234,563	226,503
Army nurses	606	624	634	650	646
Spanish war:					
Invalids	12,440	9,200	6,611	3,555	882
Widows	4,389	3,662	2,854	2,049	873
Regular establishment:					
Invalids	9,501	9,170	.....	.....	.....
Widows	3,231	2,938	.....	.....	.....
Total	994,762	996,545	999,446	997,735	993,529

The change in number of each during the last five years (1900–1904) is as follows:

Wars.	Increase.	Decrease.
War of Revolution	.....	8
War of 1812	.....	824
Indian wars	777	.....
Mexican war	.....	3,468
Civil war, invalids	.....	50,467
Civil war, widows	27,457	.....
Civil war, army nurses	.....	40
Spanish war	15,074	.....
Regular establishment	12,732	.....
Total	56,040	54,807

The net gain since 1900, is 1,233.

Prior to 1903 the cases classified as "regular establishment" were included under the head of "civil war" invalids and widows.

SEC. 3.—PENSIONERS—GAINS AND LOSSES.

There has been a gain during the fiscal year ended June 30, 1904, of the number on the pension roll, as follows:

Gain by act of the Bureau	47,048
Gain by special act of Congress	326
Total	47,374

There has been lost from the roll the following number of pensioners during the same time for causes, as follows:

By death	43,820
By remarriage	1,019
By legal limitation (minors)	1,699
By failure to claim	1,337
For other causes	1,282
Total	49,157

It will be noticed that the gain from special act, as above set forth, is 326, while, as shown by section 32, the number of special acts was 1,854. The difference in the figures is owing to the fact that a large number of the special acts were increases and pertained to pensioners already on the roll.

It is sorrowful to contemplate that the number of deaths among the soldier pensioners for the year was 31,728. Among these 30,071 of the deaths were volunteers of the civil war.

The death rate among the pensioners for the coming year will be about 47,000, and the losses to the roll from other causes will be about 5,000.

The high-water mark of pensions as to numbers was reached in 1902, as follows:

Date.	Number on roll.
June 30	999,446
July 31	1,001,494
August 31	1,000,530
September 30	1,000,732
October 31	1,000,392
November 30	999,394

The foregoing figures have not been reached again.

SEC. 4.—GAINS AND LOSSES TABULATED.

Class.	Number on roll— July 1, 1904.	Number on roll— July 1, 1903.	Total gain.	Total loss.	Net gain.	Net loss.
Revolutionary War (special act):						
Widows, etc.	3	5	.....	2	.....	2
War of 1812:						
Survivors	1	1	.....	.....	.....	.....
Widows, etc.	918	1,115	2	199	.....	197
Indian wars:						
Survivors	2,367	1,565	1,089	287	802	.....
Widows, etc.	3,519	3,169	650	300	350	.....
War with Mexico:						
Survivors	5,214	5,964	49	799	.....	750
Widows, etc.	7,821	7,910	432	521	.....	89
Civil War:						
General law—						
Invalids	240,785	259,116	1,655	19,986	.....	18,331
Widows, etc.	85,371	86,581	4,669	5,879	.....	1,210
Nurses	606	624	10	28	.....	18
Act June 27, 1890—						
Invalids	450,007	443,721	27,987	21,701	6,286	.....
Widows, etc.	168,589	161,651	15,811	8,873	6,938	.....
War with Spain:						
Invalids	12,440	9,200	4,174	934	3,240	.....
Widows, etc.	4,389	3,662	891	164	727	.....
Regular establishment:						
Invalids	9,501	9,165	707	371	336	.....
Widows, etc.	3,231	3,096	305	170	135	.....
Total	994,762	996,545	58,431	60,214	18,814	20,597

Net loss, 1,783.

The foregoing table shows that there are 720,315 soldiers on the pension roll, 273,841 widows and dependents, and 606 army nurses.

* * * * * * *

SEC. 9.—ANNUAL COST OF PENSION SYSTEM.

The cost of the pension system is composed of several items:

First. The annual value of the roll. (Sec. 9.)

Second. Total first payments, or accrued amounts paid when pension begins or certificate is issued. (Sec. 10.)

Third. Cost of maintenance of the pension system, its Bureau and agencies. (Sec. 11.)

Fourth. Loss to the roll by dropping of payment, by death of pensioner, and the like. (Sec. 3.)

The term "annual value of roll" means the amount required annually to pay the regular pension certificates then outstanding.

Year.	Annual value of roll.	Total first payments.	Cost of maintenance	Loss to the roll.	Paid for pensions, total.
1904	$134,130,203	$10,396,375	$3,849,366	$7,135,993	$141,093,571
1903	133,029,090	9,359,905	3,993,216	6,825,876	137,759,653
1902	132,152,800	8,677,548	3,831,379	6,284,532	137,504,268
1901	131,568,216	9,934,764	3,868,795	6,270,521	138,531,484
1900	131,534,544	9,828,525	3,841,707	6,512,262	138,462,131

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SEC. 11.—ANNUAL COST OF MAINTENANCE.

The following table shows the yearly cost of operating and maintaining the Bureau and the agencies, outside of payment of pensions proper:

	1904.	1903.	1902.	1901.	1900.
BUREAU.					
Number of employees	1,734	1,736	1,741	1,741	1,741
Salaries	$2,097,265.70	$2,114,483.05	$2,114,153.75	$2,118,993.20	$2,135,542.55
Paid surgeons	[a] 588,482.57	956,521.03	775,658.32	902,604.42	713,027.65
Other expenses	399,911.32	422,683.19	376,340.72	379,646.70	435,854.23
Total cost	3,085,659.59	3,493,687.27	3,266,152.79	3,401,244.32	3,284,424.43
AGENCIES.					
Number of employees	433	431	432	421	429
Salaries	$71,307.73	$71,823.09	$72,000.00	$72,000.00	$72,000.00
Clerk hire	$421,072.96	$417,131.32	$415,164.31	$412,520.21	$406,712.73
Contingent	$41,176.18	$38,687.56	$39,249.36	$41,372.73	$44,099.43
Total cost	$533,556.87	$527,641.97	$526,413.67	$525,892.94	$522,812.16
Grand total:					
Employees	2,167	2,167	2,173	2,162	2,170
Cost	$3,619,216.46	$4,021,329.24	$3,792,566.46	$3,927,137.26	$3,807,236.59

[a] Incomplete; about 25 per cent of reports not in.

Exhibits 5 and 12 show the foregoing facts more in detail.

See also sections 9 and 15.

* * * * * * *

SEC. 14.—RATES OF EXISTING PENSIONS.

The following table shows the number of pensions, and the monthly rate thereof, as condensed from Exhibits 15 to 15e, herewith.

Total number of pensions June 30, 1904, was 994,762.

Rate.	Number of pensions.	Rate.	Number of pensions.
$6 and under	113,373	From $25 to $30, inclusive	14,603
From $6 to $8, inclusive	348,743	From $30 to $36, inclusive	221
From $8 to $10, inclusive	87,358	From $36 to $45, inclusive	3,681
From $10 to $12, inclusive	302,973	From $45 to $50, inclusive	3,493
From $12 to $14, inclusive	22,924	From $50 to $72, inclusive	3,309
From $14 to $15, inclusive	3,600	From $72 to $100, inclusive	590
From $15 to $16, inclusive	7,966	At $125	1
From $16 to $17, inclusive	43,775	At $166⅔	3
From $17 to $18, inclusive	667	At $208⅓	1
From $18 to $20, inclusive	7,276	At $416⅔	2
From $20 to $24, inclusive	27,173		
From $24 to $25, inclusive	3,040	Total	994,762

The average value of a pension is $134.84. (Sec. 13.)
Over one-half of the pensions are $10 or under.
Concerning widows' pensions under special acts, see section 32.

SEC. 15.—GRAND TOTAL COST OF PENSIONS.

The disbursements for pensions by the United States from July 1, 1790, to June 30, 1865, were $96,445,444.23.

The total of pensions and expenses from the latter date to the present is, with the number of pensioners, as follows:

Year.	Paid as pensions.	Cost, maintenance, and expenses.	Total.	Number of pensioners.
1866	$15,450,549.88	$407,165.00	$15,857,714.88	126,722
1867	20,784,789.69	490,977.35	21,275,767.04	155,474
1868	23,101,509.36	553,020.34	23,654,529.70	169,643
1869	28,513,247.27	564,526.81	29,077,774.08	187,963
1870	29,351,488.78	600,997.86	29,952,486.64	198,686
1871	28,518,792.62	863,079.00	29,381,871.62	207,495
1872	29,752,746.81	951,253.00	30,703,999.81	232,229
1873	26,982,063.89	1,003,200.64	27,985,264.53	238,411
1874	30,206,778.99	966,794.13	31,173,573.12	236,241
1875	29,270,404.76	982,695.35	30,253,100.11	234,821
1876	27,936,209.53	1,015,078.81	28,951,288.34	232,137
1877	28,182,821.72	1,034,459.33	29,217,281.05	232,104
1878	26,786,009.44	1,032,500.09	27,818,509.53	223,998
1879	33,664,428.92	837,734.14	34,502,163.06	242,755
1880	56,689,229.08	935,027.28	57,624,256.36	250,802
1881	50,583,405.35	1,072,059.64	51,655,464.99	268,830
1882	54,313,172.05	1,466,236.01	55,779,408.06	285,697
1883	60,427,573.81	2,591,648.29	63,019,222.10	303,658
1884	57,912,387.47	2,835,181.00	60,747,568.47	322,756
1885	65,171,937.12	3,392,576.34	68,564,513.46	345,125
1886	64,091,142.90	3,245,016.61	67,336,159.51	365,783
1887	73,752,997.08	3,753,400.91	77,506,397.99	406,007
1888	78,950,501.67	3,515,057.27	82,465,558.94	452,557
1889	88,842,720.58	3,466,968.40	92,309,688.98	489,725
1890	106,093,850.39	3,526,382.13	109,620,232.52	537,944
1891	117,312,690.50	4,700,636.44	122,013,326.94	676,160
1892	139,394,147.11	4,898,665.80	144,292,812.91	876,068
1893	156,906,637.94	4,867,734.42	161,774,372.36	966,012
1894	139,986,726.17	3,963,976.31	143,950,702.48	969,544
1895	139,812,294.30	4,338,020.21	144,150,314.51	970,524
1896	138,220,704.46	3,991,375.61	142,212,080.07	970,678
1897	139,949,717.35	3,987,783.07	143,937,500.42	976,014
1898	144,651,879.80	4,114,091.46	148,765,971.26	993,714
1899	138,355,052.95	4,147,517.73	142,502,570.68	991,519
1900	138,462,130.65	3,841,706.74	142,303,837.39	993,529
1901	138,531,483.84	3,868,795.44	142,400,279.28	997,785
1902	137,504,267.99	3,831,378.96	141,335,646.95	999,446
1903	137,759,653.71	3,993,216.79	141,752,870.50	996,545
1904	141,093,571.49	3,849,366.25	144,942,937.74	994,762
Total	3,083,271,717.42	99,497,300.96	3,182,769,018.38	

The difference in the cost of maintenance, as shown in sections 11 and 15, for the fiscal year ended June 30, 1904, is due to the fact that in section 11 $230,149.79 disbursed on account of fees of examining surgeons during that year, which was chargeable to the appropriations for the fiscal year ended June 30, 1903, is omitted, but is included in the cost of maintenance and expenses referred to in this section (15).

From the foregoing sections it will be seen that the pension system since the beginning of the Government has cost $3,279,214,462.61.

This is exclusive of the establishment of Soldiers' Homes and the granting of bounty land amounting to nearly 69,000,000 acres.

Sec. 16.—Pensions of the several wars.

The following amounts have been paid as pensions to soldiers, their widows, minor children, and dependent relatives, on account of military and naval service during the wars in which the United States has been engaged:

War of the Revolution (estimated)	$70,000,000.00
War of 1812 (on account of service, without regard to disability)	45,326,774.16
Indian wars (on account of service, without regard to disability)	6,980,896.93
War with Mexico (on account of service, without regard to disability)	35,162,130.35
War of the rebellion	3,011,373,235.13
War with Spain	8,586,200.09
Regular establishment	2,287,924.99
Actual total disbursements in pensions	3,179,717,161.65

The amounts paid as pensions on account of disabilities and deaths as results of military and naval service during the wars of 1812 and with Mexico and in time of peace to the beginning of the war with Spain are included in the payments on account of the war of the rebellion. However, beginning with the last fiscal year, those pensioned on account of disabilities incurred in time of peace since the close of the war of the rebellion have been classified as the "Regular establishment." The amount disbursed, as shown above, for the fiscal year ended June 30, 1904, is $2,287,924.99, and is not included in the total disbursements for the war of the rebellion. Hereafter this expenditure will appear as a separate item, and not charged to the war of the rebellion as heretofore.

It is estimated that $16,000,000 were paid in pensions for disabilities and deaths due to military and naval service in the wars of 1812 and with Mexico and during the time of peace prior to the war of the rebellion, making the payments of pensions to soldiers and sailors of the war of the rebellion and of the regular military and naval establishment, since the close of said war of the rebellion, and their widows, children, and dependent relatives, amount to $2,997,661,160.12. This is outside of the cost of maintaining Bureau, agencies, and Soldiers' Homes.

* * * * * * *

SEC. 23.—THE WAR WITH SPAIN.

The following shows the condition of the Bureau with reference to the war with Spain, from the beginning:

	1904.	1903.	1902.	1901.	1900.	1899.	Total.
Original invalid applications	6,152	11,970	10,210	12,814	12,038	15,009	68,193
Other applications	4,722	4,242	2,783	2,639	1,580	2,593	18,559
Applications admitted	5,945	5,266	4,530	4,212	1,511	303	21,767
Applications rejected	4,691	5,523	7,977	6,365	920	41	25,517
Applications consolidated, etc							2,977
Applications on hand	86,491	87,195	84,456	33,541	28,545	17,336	

The expenditures by way of total annual payments are as follows:

1899	$28,606.81
1900	332,905.25
1901	1,175,225,76
1902	1,738,446.28
1903	2,204,084.21
1904	3,106,931.78
Total	8,586,200.09

The number of Spanish war pensioners on the roll is shown by section 1 to be (all classes) 16,829.

The annual value of the Spanish war pension roll is $2,224,473.

SEC. 24.—APPLICATIONS AND REJECTIONS.

There is no law or order fixing or limiting the number of applications that a claimant for a pension or for an increase of pension may file in the Bureau. Immediately upon the rejection of an original application or of an application for increase the claimant may file a new application.

Immediately upon the allowance of an original application or an application for increase a successful claimant may file a new application for an increase.

There is nothing improper in this, because the laws of Congress recognize progressive disabilities as arising from wounds and disease and provide for increase by reason thereof.

On account of the ravages of disease or by reason of rapid decline it not infrequently happens that several applications are filed before the time of adjudication arrives, so that duplicate applications are quite common, and there are sometimes as many as four or five. If one application is granted the others are rejected.

In addition to this, different and separate applications are often filed by a soldier claiming under different acts of Congress or by and through several separate attorneys. The number of duplicate applications filed in 1904 was 28,783, which greatly increases the number of rejections.

For this reason it happens that the number of rejections does not represent an equal number of separate claimants; very far from it.

Of the 108,114 cases rejected last year 83,691 were rejected on medical grounds, and most of them were applications for increase in which the examining surgeons found no increase of disability since the last medical examination. A very small proportion of the above were original claims.

There were 24,423 cases rejected on legal grounds. In these cases it was found that either there was no legal title to pension, or the claimants were unable, by reason of lapse of time and other causes, to furnish the necessary evidence to establish their claims. Most of these claimants are already in receipt of pensions under the act of 1890, and were trying to obtain an increased allowance under the general law. They were afforded every opportunity to establish their right under said law, and when they had declared their inability to furnish further evidence a formal rejection of said claim was entered up in order to take the case out of the pending files.

As stated above, a very small number of these rejections pertains to claims in which no pension has been granted. Under the provisions of the act of 1890 a claimant can prosecute claims under both laws at the same time. When a claim is admitted under one law a rejection of the other claim is usually entered up.

Thus, while the records may show a rejection, such rejection is often accompanied by an allowance of the other claim.

* * * * * * *

SEC. 26.—ORDER NO. 78.

A copy of said order is as follows:

DEPARTMENT OF THE INTERIOR,
BUREAU OF PENSIONS,
March 15, 1904.

ORDER NO. 78.

WHEREAS the act of June 27, 1890, as amended, provides that a claimant shall "be entitled to receive a pension not exceeding twelve dollars per month and not less than six dollars per month proportioned to the degree of inability to earn a support, *and in determining such inability each and every infirmity shall be duly considered*, and the aggregate of the disabilities shown be rated;" and

WHEREAS old age is an infirmity the average nature and extent of which the experience of the Pension Bureau has established with reasonable certainty; and

WHEREAS by act of Congress in 1887, when thirty-nine years had elapsed after the Mexican war, all soldiers of said war who were over 62 years of age were placed on the pension roll; and

WHEREAS thirty-nine years will have elapsed on April 13, 1904, since the civil war and there are many survivors over 62 years of age:

Now, therefore –

ORDERED: (1) In the adjudication of pension claims under said act of June 27, 1890, as amended, it shall be taken and considered as an evidential fact, if the contrary does not appear, and if all other legal requirements are properly met, that, when a claimant has passed the age of 62 years he is disabled one-half in ability to perform manual labor and is entitled to be rated at six dollars per month; after 65 years at eight dollars per month; after 68 years at ten dollars per month, and after 70 years at twelve dollars per month.

(2) Allowances at higher rate, not exceeding twelve dollars per month, will continue to be made as heretofore, where disabilities other than age show a condition of inability to perform manual labor.

(3) This order shall take effect April 13, 1904, and shall not be

deemed retroactive. The former rules of the office fixing the minimum and maximum at 65 and 75 years, respectively, are hereby modified as above.

E. F. WARE,
Commissioner of Pensions.

Approved:
E. A. HITCHCOCK, *Secretary.*

At this date, July 1, 1904, the number of the civil war soldiers under 62 years of age constitute about 30 per cent of the survivors. About 20 per cent more are under 65; about 20 per cent more under 68, and the balance, about 30 per cent, are 68 and over.

SEC. 27.—BASIS OF ORDER NO. 78.

The said order was based upon the act of June 27, 1890, as amended. Said act, when read parenthetically, is as follows:

SEC. 2. All persons who served ninety days or more in the military or naval service of the United States during the late war of the rebellion and who have been honorably discharged therefrom and who may be suffering from any mental or physical disability of a permanent character, not the result of vicious habits, which so incapacitates them from the performance of manual labor as to render them unable to earn a support, *shall, upon making due proof of the fact according to such rules and regulations as the Secretary of the Interior may provide*, be placed upon the list of pensioners and be entitled to receive a pension not exceeding twelve dollars per month and not less than six, proportioned to the degree of inability to earn a support, *and in determining such inability each and every infirmity shall be duly considered*, and the aggregate of the disabilities shown be rated.

Under the above law old age has been pronounced an infirmity, and has for many years been considered in the rating of disabilities. Order No. 78 introduced no new principle. It only made certain and definite the experience of the Bureau.

As there are over 375,000 pensioners drawing under $12 per month it would almost seem that each of them had already received his age pension, if, after an active promulgation of the order for three and a half months there were only 28,806 applications for increase, being less than 8 per cent.

This order is believed to be in the direct line of economy, as it certainly is in the line of precedent. See sec. 29 hereof.

SEC. 28.—INSTRUCTIONS, ORDER NO. 78.

Upon the issuing of said order the following instructions were formulated concerning it by the Pension Bureau, and widely promulgated:

"The above-quoted order is confined to claims filed under section 2 of the act of June 27, 1890, as amended by the act of May 9, 1900, by officers and enlisted men of the Army, Navy, or Marine Corps of the United States, who served ninety days or more during the war of rebellion and were honorably discharged, and who are partially or wholly incapacitated from earning their support by manual labor, within the meaning of said acts.

"Said order in no way changes the provisions of existing laws, but

simply operates as a rule of evidence for the guidance of this Bureau in determining ratings to which applicants are entitled under section 2 of the acts referred to. Pension allowed under said acts, whether affected by Order 78 or not, is not in addition to pension allowed under any other law, as the law specifically prohibits the payment of more than one pension to the same person over the same period.

"It follows, therefore, that pension allowed under the act of June 27, 1890, as amended, whether for age or for a condition of incapacity to perform manual labor produced by other disabilities, is not in addition to pension which has been, or may hereafter be, allowed under the general laws for disabilities incurred in the service and line of duty.

"The effect of the order on those having pension already will only be to increase such pension up to the age limit if the pension already allowed is below that amount.

"A pensioner receiving a smaller rating under the general laws than he is entitled to under said acts may elect which pension he will draw, and payments made under the old certificate covering the same period as that named in the new certificate will be deducted from the first payment made under the latter.

"The order has no application to claims filed by or in behalf of widows, minor children, dependent parents, or dependent brothers and sisters.

"Neither does it apply to claims based upon service in the Mexican war, Indian wars, the Regular Army or Navy prior to or subsequent to the war of the rebellion, the Spanish-American war, or the Philippine insurrection, but is confined solely to the claims of officers and enlisted men of the Army, Navy, or Marine Corps of the United States who served ninety days or more during the war of the rebellion and were honorably discharged.

"The order will not benefit acting assistant or contract surgeons, provost-marshals, deputy provost-marshals, or enrolling officers who may have rendered service during the war of the rebellion, as such persons are not pensionable under the provisions of the act of June 27, 1890.

"As the maximum rate of pension provided for under the act of June 27, 1890, is $12 per month, the order will benefit no person who is in receipt of a pension of $12 or more.

"The adoption of a general rule covering the question of medical examination is impracticable, and the procedure in this respect must be determined by the facts in each individual case, as while a claimant may be 62, 65, or 68 years of age, which in itself would entitle him to a rating of $6, $8, or $10 per month, he may also be suffering from disabilities other than age, which, if properly shown, would entitle him to a rate greater than he could receive for age alone.

"If one has rendered the necessary service during the war of the rebellion, and is in receipt of a pension of less than $12 per month, he is at liberty to file in this Bureau an application under the act of June 27, 1890, as amended, and when such application shall have been filed it will be given the benefits of Order 78, and he will be advised as to what further action, if any, it is necessary to take.

"A declaration, stating that a claimant is 62, 65, 68, or 70 years of age, as the case may be, is a sufficient allegation, even if no other disabling cause is set forth, but the date of birth should be stated.

"Blank declarations for original pension and increase of pension

under the act of June 27, 1890, as amended, are inclosed. If you are not a pensioner, or if you are drawing a pension under the general law of less than $12 per month, blank headed 'Declaration for invalid pension' should be used; but if you are a pensioner at a rate of less than $12 per month under the act of June 27, 1890, use the blank headed 'Declaration for increase of pension.' The declaration may be executed before any officer authorized to administer oaths for general purposes, a notary public, justice of the peace, or clerk of court being such an officer.

"Claimants are at liberty to appoint an attorney to prosecute their claims or to prosecute them in their own name without the assistance of an attorney.

"If a claimant desires to prosecute the claim himself, it will receive the same consideration on the part of this Bureau as if an attorney had been appointed.

"In original claims under the act of June 27, 1890, as amended, the attorney's fee is $10, while the fee in claims for increase under said acts is limited to $2."

SEC. 29.—CLAIMS AND ALLOWANCES, ORDER 78.

There were filed from the date of issuance of Order No. 78, up to and including June 30, 1904, the following number of claims under said order:

Originals	18,303
Increases	28,806
Total	47,109

Of the foregoing there were adjudicated during the months of April, May, and June, and certificates issued for, the following number:

Originals	3,859
Increases	14,768
Total	18,627

The rates of the said issues were as follows:

Originals:	
At $6 per month	1,949
At $8 per month	1,013
At $10 per month	333
At $12 per month	564
Total	3,859
Increases:	
From $6 to $8 per month	2,508
From $6 to $10 per month	1,046
From $6 to $12 per month	1,273
From $8 to $10 per month	2,169
From $8 to $12 per month	3,688
From $10 to $12 per month	4,084
Total	14,768

Of the foregoing number (18,627) of certificates issued so large a portion (8,761) were only $2 increases and the time was so short between filing and adjudication that the money due on them all prior to July 1, 1904, amounted to less than $90,000, as can be readily computed.

The amount appropriated by Congress for this purpose was $1,500,000, but owing to the small proportionate number of applications for increase, and the small amount involved in each increase, averaging below $3 per month, it transpires that less than 6 per cent of the appropriation was called for and the unused balance went back into the Treasury on the close of the fiscal year. See section 12 hereof.

SEC. 30.—APPLICATIONS FOR INCREASE.

The applications for increase of pension filed in the Bureau from July 1, 1900, to June 30, 1904, inclusive, were as follows:

	1904.	1903.	1902.	1901.	1900.
Act of June 27, 1890	107,148	79,396	61,868	72,293	50,507
General law	52,434	57,761	42,665	41,406	37,533
War with Spain	2,687	1,832	1,352	627	146
Regular establishment	53	1			
Old war and navy	5,679	5,093	5,283	4,050	2,988
Total	168,001	144,083	111,168	118,376	91,174

It will be noted that the applications for increase filed during the past year were largely in excess of the number filed in any year since 1900. This section includes applications under order 78.

As pensioners grow older their disabilities in many cases increase with age, and upon proper showings new certificates at higher rates are issued.

The following table shows the number and rate of such increase certificates for five years last past, together with number of applications:

	1904.	1903.	1902.	1901.	1900.
Number of applications	168,001	144,083	111,168	118,376	91,174
Number of increases granted	72,462	58,120	43,474	38,185	44,408
Annual value of increase	$3,194,418	$3,076,481	$1,790,461	$1,853,676	$2,442,761

As to applications and certificates under order 78 see section 29.

* * * * * * *

SEC. 32.—SPECIAL ACTS.

Congress during the second session of the Fifty-eighth Congress passed 1,854 special acts.

The following summary shows the number granted at the rates specified:

Rate specified.	Number granted.	Rate specified.	Number granted.
$72	4	$15	14
$70	1	$14	1
$60	1	$12	280
$55	1	$10	2
$50	46	$8.50	1
$46	1	$8	98
$40	58	$6	3
$36	23	Inoperative:	
$35	3	$40	1
$30	478	$30	5
$25	16	$24	8
$24	456	$20	1
$20	277	$12	1
$17	44		
$16	35	Total	1,854

The actual increase to the roll in number of pensioners by the above special acts was 326, the balance, 1,528, being already recipients of smaller pensions.

The number of special acts for the last five years is as follows, with annual value thereof and annual increase due to special acts:

	1904.	1903.	1902.	1901.	1900.
Number of special acts	1,854	1,057	1,114	707	684
Annual value	$515,993	$284,364	$316,620	$196,176	$195,084
Annual increase due to special acts	$274,576	$155,922	$182,825	$120,192	$117,759

When a special act passes Congress a certificate is immediately issued by the Bureau to the grantee, and the pensioner takes his place with all other pensioners upon the records of the Bureau.

Under existing laws the highest rate of pension that can be paid to the widow of an enlisted man is $12 per month, and for the widows of commissioned officers rates of $15, $17, $20, $25 and $30 per month, according to rank, are provided by the law. The rate of $30 is the highest, and is granted to widows of officers holding rank above that of major, including generals and admirals.

It will be observed in Exhibit 15e that there are on the rolls the names of 274 widows receiving pensions in excess of $30 per month. All these are cases which were granted by special acts of Congress and the beneficiaries are mostly widows of officers who had attained high rank in the Army or Navy.

There have been granted from the beginning of the civil war to date by special act of Congress 12,207 pensions, (including increase of pensions), of which 7,020 are now on the rolls, with an annual value of $2,003,976. See Exhibit 15e for rates.

* * * * * * *

SEC. 37.—NEW LEGISLATION.

In Exhibit 25 to this report is given the text of all legislation pertaining to this Bureau enacted by the present (Fifty-eighth) Congress. The various heads of legislation are:

1. Details of appropriations for payment of pensions, employees of pension agencies, and fees of examining surgeons. (Acts February 18 and April 27, 1904, 33 Stat. L., 34, 315, 413.)

2. Details of appropriations for payment of employees in the Bureau and special examiners. (Act March 18, 1904, 33 Stat. L., 125.)

3. Increasing the pensions of those who have lost both eyes or have become totally blind from causes originating in the military or naval service of the United States. (Act April 8, 1904, 33 Stat. L., 163.)

4. Relative to claims for reimbursement of expenses of last sickness and burial of deceased pensioners. (Act April 28, 1904, 33 Stat. L., 465.)

* * * * * * *

SEC. 66.—RECOMMENDATIONS.

I recommend the appropriation of $300 for medical books in the Bureau and $250 for law books.

I recommend the passage of a law that any man who is convicted in a court of an infamous crime should forfeit his pension or his right to one.

I recommend the passage of a law prohibiting the giving of pensions to those women who marry soldiers after the soldiers become old pensioners.

I recommend the passage of a law providing for superannuated clerks, and invite attention to section 44, showing the conditions in this Bureau, where there are 513 employees who are 60 years old or over.

I recommend that the New England pension agencies of Augusta, Boston, and Concord be consolidated. The consolidated agency would then have only 94,112 pensioners, while Columbus has 100,637 and Topeka has 115,620.

I recommend that in the act of March 3, 1899, the word "resident" be stricken out at the beginning of the first proviso, because, as the proviso now stands (Pension Laws, p. 121), a United States pensioner living abroad has an advantage over a resident pensioner.

I recommend a different method of examining applicants for pension. The present system is a most uncertain, expensive, and unsatisfactory method. The system is liable to outside control and political dictation, and generates an enormous amount of political friction.

I recommend the fixation by law of a small fee for services of attorneys under each of the following acts:

1. Act of March 3, 1901, amending section 4708, Revised Statutes, in relation to pensions to remarried widows.
2. Act of February 28, 1903, amending the act of March 3, 1901 (Public No. 124).
3. Act of August 5, 1892, granting pension to army nurses.

* * * * * * *

SEC. 68.—CONCLUSION.

It will be observed from reading the preceding sections that the work done in the Bureau last year has not been excelled. There have been filed in the Bureau during the last two years the vast number of nearly one-half million applications, yet the Bureau has on hand for adjudication over 50,000 less cases than two years ago. And the esprit de corps of the Bureau was never higher than at present, nor its capacity for work as great.

I am under great and special obligations for the efficient services of Hon. James L. Davenport, first deputy.

I am also indebted to Hon. L. M. Kelley, second deputy, and to W. H. Bayly, chief clerk.

I desire to thank William L. Marsh, of Tennessee; Calvin Neilson, of Pennsylvania; Joseph M. McCoy, of West Virginia; and T. Fletcher Dennis, of Illinois, for their personal services in assisting in the execution of the duties of the Commissioner at headquarters. The foregoing are all men of the highest order of ability, honor, and industry, and their services to the Government have been exceedingly valuable.

I desire to specially thank Thomas D. Yeager, my private secretary, and A. H. Thompson, chief of the finance division, for their very efficient services and assistance in the preparation of this report.

All of which is respectfully submitted.

E. F. WARE,
Commissioner.

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REPORT OF THE COMMISSIONER OF INDIAN AFFAIRS.

OFFICE OF INDIAN AFFAIRS,
Washington, D. C., October 17, 1904.

SIR: The Seventy-third Annual Report of the Office of Indian Affairs is respectfully submitted.

FINANCE.

Appropriations.—The aggregate of appropriations contained in the act making appropriations for the current and contingent expenses of the Indian Department and for fulfilling treaty stipulations with various Indian tribes for the fiscal year ended June 30, 1905, is $9,853,480.75. The aggregate of the appropriations for the same purposes for the fiscal year 1904, as given in the previous report, was $8,521,306.77.

The objects of the appropriations for the two years are shown as follows:

TABLE No. 1.—*Appropriations contained in the Indian appropriation act for the fiscal years 1904 and 1905.*

	1904.	1905.
Current and contingent expenses	$727,940.00	$727,400.00
Fulfilling treaty stipulations	2,181,633.35	3,514,285.85
Miscellaneous supports, gratuities	649,000.00	570,000.00
Incidental expenses	93,400.00	76,900.00
Support of schools	3,522,950.00	3,880,740.00
Miscellaneous	1,346,383.42	1,084,154.90
Total	8,521,306.77	9,853,480.75

Excess of 1905 over 1904, $1,332,173.98.

Other appropriations for the Indian service were made by the deficiency and other acts for 1904 and 1905 as follows:

TABLE No. 2.—*Appropriations made by deficiency and other acts, 1904 and 1905.*

	1904.	1905.
Current and contingent expenses	$36,000.00	
Miscellaneous	45,000.00	$25,000.00
Total	81,000.00	25,000.00

Adding these to the foregoing we have the total of the appropriations for the two years as follows:

TABLE No. 3.—*Total appropriations for the Indian service for the fiscal years 1904 and 1905.*

	1904.	1905.
Current and contingent expenses	$763,940.00	$727,400.00
Fulfilling treaty stipulations	2,181,633.35	3,514,285.85
Miscellaneous supports, gratuities	649,000.00	570,000.00
Incidental expenses	93,400.00	76,900.00
Support of schools	3,522,950.00	3,880,740.00
Miscellaneous	1,391,383.42	1,109,154.90
Total	8,602,306.77	9,878,480.75

Excess of 1905 over 1904, $1,276,173.98, accounted for as follows:

1905 over 1904:		
Fulfilling treaty stipulations	$1,332,652.50	
Support of schools	357,790.00	
		$1,690,442.50
1904 over 1905:		
Current and contingent expenses	36,540.00	
Miscellaneous supports, gratuities	79,000.00	
Incidental expenses	16,500.00	
Miscellaneous	282,228.52	
		414,268.52
		1,276,173.98

The great increase in the 1905 appropriation, it will be observed, is principally under fulfilling treaty stipulations. This arises from the fact that several large appropriations were made pursuant to agreements ratified during the year, as follows:

Turtle Mountain band of Chippewa	$1,000,000.00
Sioux of Rosebud Reservation	75,000.00
Crow	131,200.00
Flathead	175,000.00
Indians of Devils Lake	52,000.00
Total	1,433,200.00

As an offset to this, treaty items of former years were reduced or dropped out, which leaves the net increase as reported above.

Expenditures.—The expenditures for the Indian service for the fiscal year ended June 30, 1904, as reported by the Treasury Department, were as follows:

Current and contingent expenses	$703,660.00
Fulfilling treaty stipulations	1,690,969.87
Miscellaneous supports, gratuities	530,301.32
Trust funds	2,033,955.53
Incidental expenses	74,902.64
Support of schools	3,401,746.82
Miscellaneous	2,002,813.91
Total	10,438,350.09

* * * * * * *

IRRIGATION.

The Indian appropriation act for the current fiscal year, approved April 21, 1904, contains an appropriation of $185,000 for construction of ditches, reservoirs, purchase and use of irrigating tools and appliances, and purchase of water rights on Indian reservations, of which $35,000 was made immediately available.

The following expenditures have thus far been authorized from this appropriation:

Pima Reservation, Ariz., construction of additional wells, etc.	$4,000.00
Yakima Reservation, Wash., construction of additional laterals, etc.	25,000.00
Crow Reservation, Mont., completion of Big Horn Canal	15,000.00
Zuni Reservation, N. Mex., continuation of dam and reservoir	40,000.00
Klamath Reservation, Oreg., completion of Crooked Creek ditch, construction of agency spring ditch, etc	5,000.00
Pala Reservation, Cal., continuation of irrigation construction	2,700.00
Total	91,700.00

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EDUCATION.

In 1882, just a generation ago, Congress tardily recognized the all-important necessity for educating the young Indian in the ways of civilization by the appropriation of $135,000. This meager sum has been gradually increased since that time until the last appropriation was $3,500,000. Educational work has kept pace with these donations on the part of a liberal people, who now possess the Indians' vast ancestral domain. Then 4,000 red pupils were gathered into inadequate, unsanitary schoolhouses, with largely incompetent teachers and instructors; now there are 30,000 being educated according to the best and most approved pedagogical methods. Hygienic science has played its part in the construction of buildings, and intelligent supervision has been brought into action in the fields of industrial and mechanical instruction. The work of the class room has been correlated with the industries of the field and the shop. Indian girls and boys are being taught how to care for their homes and farms. The excrescence of Indian schools—higher education—has been eliminated and practical work supplements intelligent theory.

Political and personal favoritism has largely been removed from the appointment, promotion, and retention of school employees. Where only seven years ago the dictum of the politicians, and the favoritism of the agent, formed the basis of appointments, now merit, integrity, and honest work are given recognition. All school employees enter the service through competitive examination, and their retention depends upon their effective industry, capability, and zeal as reported by disinterested and well-informed inspecting officials. The result has been that the morale of the schools and pupils has improved. Systems have been developed and evils recognized have been decreased. Length of service having increased, mistakes have more readily been discovered and remedies attempted, all of which were impossible under the old régime of shifting policies with shifting employees. Light has been turned upon dark places, and frequent inspections by competent officials have minimized many of the evils which in the past disgraced the Indian service. The unworthy are being gradually removed.

Seven years ago there were 61 agents in charge of reservations and schools. These were all political appointments. Their term of service would not average four years each. The superintendents in charge of independent schools numbered 32. Under the policy which has been pursued since, and which has proven eminently satisfactory, the number of agents has been reduced until at present there are only 22. In the breaking up of reservation lines, the allotment of Indian lands, and the segregation of the Indians into smaller areas of supervision, the number of bonded school superintendents in charge of schools, agencies, or parts of agencies, has increased to 86. Continuous service of well-educated men, accustomed to deal with young Indians, has had the effect of placing this branch of the service on a higher and more business-like plane. It is true that the school teacher per se is not as a rule a business man; but fortunately out of the large corps of classified employees, superintendents, clerks, farmers, disciplinarians, etc., a wide field for selection is secured. Promotions to these responsible places are made from those who have practically demonstrated by years of service their knowledge of Indian work, and their ability and fitness for such executive positions.

Civilization having swept in and around many of these reservations, and the Indians themselves having arrived at a degree of civilization which would warrant the taking away of the parental hand of the Government, it was a wise movement when conditions were ripe to abandon the agency and substitute the school system. A bonded superintendent, who will work for the Indians' independence and self-support and adopt business methods in the management of their affairs, is of incalculable benefit to the scheme of Indian civilization. Especially is this true when a tribe is practically civilized and allotted, located in a prosperous section of the country, and has the benefits of good schools and churches. Under such conditions, it is folly for the Government to persist in treating such Indians as uncivilized and uneducated bands of savages.

Economical administration within proper limits is always to be desired. Economy at a sacrifice of effective results is poor policy. While it is a matter of public note that the cost of living has materially advanced in the last few years, there has been no increase in the cost of schools. Improved buildings, more appliances, and better lighting, water, and sewer systems have been secured. There has been no curtailment, however, in the expense of running Indian schools, where such curtailment would result in a loss of efficiency. Well-constructed school plants, better salaries, and elimination of political and personal favoritism have helped to secure a corps of employees which though not proportionally larger than in 1897, yet more effectively does the work.

This is clearly illustrated in the fact that for 18,603 pupils that year in 234 Government schools, 2,049 employees were required, making the total cost of maintaining the schools, buildings, improvements, subsistence, and employees $3,200,000, or $172 per capita. For the past year, for 25,248 pupils in 253 schools, only 2,295 employees were engaged—a small increase of 246 people for the increase of 6,645 pupils and 19 schools, the total cost of maintenance, etc., being $4,222,950, or $167 per capita.

Where creature comforts are unknown the incentive to work is absent. The savage works to satisfy the present cravings of hunger, the civilized man to provide comforts, pleasure, and power. Deprive the white race of the necessity for working and it will sink to the level of a savage. Provide these incentives to the savage and he will begin the march toward civilization.

While many have urged that the Indian should be taught how to work, it is only within the past few years that such teaching has been made practical. Theorizing and teaching the value of "work" to the young Indian does not, any more than it does for the white boy, indicate that he will apply it. Therefore at each school the relative value of instruction and labor is determined. A practical measure of this value is the result produced. Labor without attendant results is always distasteful. While the products raised are secondary to instruction, yet they will represent a fair standard by which to judge. In 1902 the value of subsistence raised on the school farms, and largely issued to the pupils, was $76,477.52; in 1903, $97,146.53, an increase of $20,669; in 1904 it was $116,259.82, an increase of $19,113.29.

For seven years instruction in the schools has emphasized the dignity of labor. New habits have been cultivated by placing object

lessons in modern buildings, better food, better clothing, and more civilized amusements before the Indian boys and girls. To see and to feel something higher is to desire, to reach for, and finally to acquire. But the long-continued Government and philanthropist policy of pauperizing the Indians, the conservatism of agents, the incompetency of employees, were obstacles which have required time to overcome. The old scheme was to give freely annuities, houses, rations, stock, etc., and then, if necessary that work should be done for the Indians themselves, to pay them enormous wages for the same, or provide employment for some political or personal henchman of the agent or his backer, by establishing new positions for employees to perform labor which should have been done by the red man himself. Every incentive was thus taken from the able-bodied Indian to provide even the smallest creature comfort for himself and family. In 1897 the total value of products raised and sold by Indians was $1,033,047; in 1900 it was $1,408,865, which increased the past year to $2,208,469. Gauge a community by the condition of its roads and apply the same rule to Indian reservations. In 1897 the Indians worked 14,247 days on their highways, and in 1903 they gave for this purpose 95,215 days of work.

These two items alone are indications of progress which speak loudly for the success of a continuous policy of only seven years.

As the schools have multiplied, and children passed through them, the effect is shown on the breaking away from the blanket and long hair. In 1897 there were 182,843 Indians in the United States, exclusive of Alaska and the Five Civilized Tribes. Of this number 88,939 wore citizens dress wholly, 33,804 partly. Out of a population of 187,966 last year, 111,703 dressed entirely as American citizens and 44,558 in part. There are to-day 156,261 Indians out of a total of 187,966 who are adopting the clothing of civilization and casting aside the blanket of barbarism. All this has been effected by the quiet, sincere labors of zealous teachers, who are breaking down old customs, manners, and modes of living so gradually and so effectively as to produce tremendous results, with only the smallest degree of friction. No longer does the lone graduate of a nonreservation school, dressed in the natty school uniform or quiet habiliments of a white man, find himself out of place on an Indian reservation. Now he meets thousands who are clothed as he is, and who have similar aspirations and desires. His acquired ambition to promote his own welfare finds support from others, and the influence of conservative chiefs and headmen is continually decreasing.

* * * * * * *

Appropriations for school purposes.—The appropriations for Indian school purposes made by Congress for the past twenty-eight years, showing increase or decrease over each preceding year, are given in the table following.

TABLE No. 12.—*Annual appropriations made by the Government from and including the fiscal year 1877 for the support of Indian schools.*

Year.	Appropriation.	Per cent increase.	Year.	Appropriation.	Per cent increase.
1877	$20,000		1892	$2,291,650	24.3
1878	30,000	50	1893	2,315,612	1.04
1879	60,000	100	1894	2,243,497	a3.5
1880	75,000	25	1895	2,060,695	a8.87
1881	75,000		1896	2,056,515	a2
1882	135,000	80	1897	2,517,265	22.45
1883	487,200	260	1898	2,631,771	4.54
1884	675,200	38	1899	2,638,390	.25
1885	992,800	47	1900	2,936,080	11.28
1886	1,100,065	10	1901	3,080,367	4.91
1887	1,211,415	10	1902	3,244,250	5.32
1888	1,179,916	a2.6	1903	3,531,250	8.84
1889	1,348,015	14	1904	3,522,950	a.23
1890	1,364,568	1	1905	3,880,740	10.15
1891	1,842,770	35			

a Decrease.

Indian school service institutes.—Under the authority of the Secretary of the Interior institutes were held as follows: Standing Rock Agency, N. Dak.; Rosebud Agency, S. Dak.; Fort Berthold Agency, N. Dak.; Fort Totten, N. Dak.; and the general meeting of the congress of Indian educators at St. Louis, Mo. In view of the fact that many of the schools are located in isolated parts of the country, Indian school employees are denied the privilege of attending educational meetings whereby they would come in contact with the best educational thought of the day, and the bringing together of those engaged in similar work is considered of great importance in order that they may compare notes and discuss and adopt the most practical methods in giving the young Indian an education that will enable him to become self-supporting. These gatherings offer Indian school employees the opportunities for mutual benefit and advancement enjoyed by the public school teachers at the county and State meetings, thereby enabling them to keep abreast of the times and to bring their standard to the degree of excellence required in the public schools.

The attendance at the St. Louis meeting far surpassed that of any similar gathering. The meeting being held in connection with that of the National Educational Association and on the World's Fair Grounds, exceptional opportunities were afforded for study and improvement. Employees were enabled to attend the meetings of the National Educational Association where eminent American and foreign educators presented the characteristics of their respective systems. They were also enabled to take advantage of the unusual facilities offered to make an intelligent study of the educational exhibits, illustrating every stage of educational development, and to visit the various model schools conducted on the grounds. The school conducted in the Indian building, showing how the Indian pupils are instructed in the elementary English branches and the practical industrial arts, including agriculture and the trades for the boys and general housekeeping for the girls, served as an example of the best type of Indian education—training the hand and brain jointly—and furnished an object lesson in the uplifting of aboriginal peoples to the plane of intelligent and substantial citizenship. The literary and industrial work of the pupils contributed by the various Indian schools to the Indian exhibit served to show the marked advancement in educating the young Indian. Great credit is due to the officials of the World's Fair for their cooper-

ation with the superintendent of Indian schools in making the meeting a marked success.

The system of holding institutes has been extended and dates and places so arranged as to enable employees to attend at least one meeting each year. All the institutes were well attended, and the cooperation of the teachers and workers attest their earnest desire to advance the Indian as rapidly as possible to a self-sustaining position.

INDIAN SCHOOL SITES.

Publication of the history of Indian industrial school sites and of the title to the land upon which Indian schools are located was commenced in the annual report of this Office for 1892, and has been continued in subsequent reports.

THE INDIAN EXHIBITS AT THE ST. LOUIS EXPOSITION.

For the Louisiana Purchase Exposition two entirely distinct exhibits have been made by this Bureau. In order that the Indian Bureau might not be entirely omitted from the great Government building exhibit, a small space was allotted there in which are sharply contrasted Indian conditions existing within the limits of the Purchase one hundred years ago and those prevailing there to-day, no tribes outside the purchase being represented.

A miniature bark wigwam with canoe and wild rice from Minnesota pictures the home life of Indians of the forest and lake region; a miniature skin teepee with travois and bag of pemmican stands for the Great Plains, and a Wichita grass house for the Indians of the Southern region; while other primitive habitations, such as bark houses and an earth lodge, are shown by pictures. A woman's dress with the old-time decoration of the milk teeth of the elk—a precious heirloom—was loaned by a Cheyenne, and an almost lost art among the almost extinct Chetimaches Indians of southern Louisiana is represented by a collection of fine baskets loaned by Mrs. Sidney Bradford. There is also a case containing old-time implements and utensils and articles of dress and ceremony. The design of a frieze ornamenting the space was taken from prehistoric pottery made by tribes of the Mississippi Valley.

There is also the portrait of Thomas L. McKenney, who had charge of Indian Affairs under the War Department from 1816 to 1824 as superintendent of Indian trade. In 1824, when the Bureau of Indian Affairs was organized in that Department, he was placed at its head and held the position until 1830, when he became one of the first victims of the "spoils system," being removed from office by President Jackson.

A colored map shows the various cessions by which almost every acre of land within the Louisiana Purchase has been obtained by the Government from the Indian occupants through formal negotiations. Granting that some treaties were not fairly made, and others not fully kept, yet the map is a graphic presentation of the fact that our Government has a conscience, and as a rule lives up to it, and that its ruling policy is neither to ill-treat nor overreach weaker peoples, but to recognize their rights and foster their development.

A second map brings the record forward one hundred years and shows the very small areas within the Purchase now occupied by

Indians, while a third map is dotted over with the hundreds of schools now in operation among these Indians. Also a large chart presents the following statistics, most of the figures being in round numbers:

Indian population in the United States (excluding Alaska)	270,000
Indian population now within the Louisiana Purchase	144,000
Allotments of land made to Indians (since allotment act of 1887)	50,226
Employed in the Indian Service—Agents, teachers, physicians, mechanics, Indian police, etc.—white, 2,264; Indians, 1,969	4,233
Annual expenditures for Indian education:	
Appropriations by Congress	$3,000,000
Tribal funds	1,040,000
Contributions by missionary societies	425,000
State of New York (for New York Indians)	25,000
Total	$4,490,000
School statistics for 1903 (including Indians in New York and Indian Territory):	
Indian pupils enrolled in—	
117 boarding schools under Government control	19,860
140 day schools under Government control	4,500
65 mission schools	5,000
43 public schools	928
415 schools supported by Five Civilized Tribes	14,500
Total	44,788
Growth of Indian education (excluding Indians in New York and Indian Territory):	
Pupils enrolled in 1870	3,095
Pupils enrolled in 1880	7,240
Pupils enrolled in 1890	17,477
Pupils enrolled in 1903	28,411

Concretely the ability of the Indian of to-day to engage in civilized pursuits and his skill in the arts and crafts of our own race are shown by various articles made by Indians. A model hay baler with patterns for castings made by a Potawatomi; model wagon and harness, bedstead and furnishings, wheelbarrow and hayrack, full-size uniform suits for boys and girls, besides shoes, brooms, a tool chest, blacksmith tools, and other samples of work in wood, iron, and leather. The furniture of the exhibit was made by pupils in Indian schools, chairs, settees, table, tabourets, mantel, bookcase, and an arched grill, not omitting the work of little fingers in sloyd, nor the display of fine drawnwork, embroidery, and lace.

Art ability of a high order is shown in the four oil paintings of Indian life loaned by Miss Angel Decora, of the Winnebago tribe, who took the art course at Smith College and afterwards studied under Howard Pyle. She also made the design for the mantelpiece.

The intellectual training given in Government Indian schools, its practical application, and the ability of the Indian to assimilate the "book knowledge" as well as hand skill of the white race, is shown by the cases of schoolroom papers from 18 boarding schools and several day schools, which give the actual work of pupils, most of it uncorrected, from kindergarten through the eighth grade.

The schools represented in this exhibit are Cantonment, Chilocco, Crow, Fort Berthold, Fort Lewis, Fort Peck, Fort Sill, Genoa, Grand Junction, Haskell, Leech Lake, Morris, Pine Ridge, Rosebud, Seneca, Shoshoni, and Tongue River.

Far from the Government Building at the other end of the ground near the Administration Building is another Indian exhibit much larger

and far more interesting and important, for there "still life" gives place to action. For the Indian exhibit at St. Louis, Congress, by act of June 28, 1902, appropriated $40,000, and authorized the Secretary of the Interior to cause to be assembled as a part of the Louisiana Purchase Exposition—

> Such representatives of the different Indian tribes and such exhibits from Indian agencies, schools, and archives as he may deem advisable or necessary to illustrate the past and present conditions of the Indians and the Indian tribes of the United States, and progress made by such in education, art, and industry, and the methods of education and government, and such other matters and things as will fully illustrate Indian advancement in civilization.

A supplementary appropriation of $25,000 was contained in the act of April 21, 1904.

At the outset this office set its face strongly against any exhibit which, with spectacular shows of dances, sham battles, etc., would resemble a "Wild West" show. Early Indian life did not consist in dancing and fighting any more than our life of to-day is made up of quarrels and amusements. The industries which bring food and clothing absorbed most of the attention then as they do nowadays, and it was believed that such industries adequately presented would form a more novel as well as scientific and creditable exhibit than the other sort, which had been almost outworn by Wild West and similar shows which had gone from one end of the country to the other. Moreover, such shows are a positive detriment to the individual Indians who take part in them, retard Indian civilization generally, are inconsistent with the announced policy of the Department, and chiefly gratify an idle curiosity or pander to a desire for sensationalism.

It was decided to adopt, with much modification, amplification, and improvement, the scheme undertaken at the Chicago Exposition, and to plant a Government Indian school with its industries on the Exposition grounds and to offset it by a portrayal of primitive Indian home life and avocations.

Under the charge of S. M. McCowan, superintendent of the Chilocco school, Oklahoma, and a full corps of employees, a model Indian school of 150 pupils has been in actual operation, which exemplifies the Indian school system of the Government, and in and around it are adult Indians living in the old way in the old-time habitations and pursuing the handicrafts of their forefathers. A detailed account of what has been done and how the enterprise is managed is given in the following extracts from report of Superintendent McCowan:

> In order to carry out to the full intent the ideas of the lawmakers as expressed and defined in the appropriation act, it became necessary to construct a suitable building. Accordingly a building 40 by 208 feet, with a rear addition to be used as recitation room and concert hall, was duly constructed at an expense of $17,000. This price did not include the inside carpenter work, wiring, and plumbing, which work it was thought desirable to have accomplished by student labor.
>
> The exhibit scheme embraces a contrasting exposition of the old Indian and the young, the old life and the modern, the stages of evolution from the old life to the new, as developed through the Government's administrative and educational policies and processes.
>
> To carry out this scheme the following-named groups of old Indians were collected: Apache 15, Arapaho 23, Comanche 5, Maricopa 5, Navaho 21, Cheyenne 17, Pawnee 21, Pima 7, Pueblo 24, Pomo 2, Sioux 35, Chippewa 20, and Wichita 20.
>
> In addition to the old Indians, 150 students were brought here from Chilocco, Haskell, Genoa, Fort Shaw, and Sacaton Indian schools. This number included a very fine Indian band of 40 pieces.
>
> The first floor of the school building is divided by a wide hallway into two long compartments which are subdivided into rooms or booths. On one side the booths

are filled with representative Indians from the various tribes at work at their native industries, as nearly as possible in realistic fashion. There are 16 of these booths occupied by old Indians. Beginning at the south end we have some Pueblo women grinding corn and making wafer bread in the old-fashioned manner; the next booth contains Geronimo working industriously on bows and arrows which he sells readily; then come the Pueblo pottery makers, Pueblo weavers, the celebrated Pomo basket makers, the famous Pima basket weavers, the Maricopa pottery makers, the Navaho blanket weavers, the Sioux pipestone workers, the Sioux bead and buckskin workers-the Jicarilla Apache basket makers, the celebrated Navaho silversmiths, the Chip, pewa basket, bead, and mat workers, the Wichita and Pawnee bead and buckskin workers, and the Cheyenne bead and buckskin workers.

On the opposite side of the hall we have, in contrast to the old-time corn grinders and bread makers, a modern domestic science department, including laundry, kitchen, and dining room, conducted entirely by Indian girl students. The furniture in this department was made entirely by Indian boys. The kitchen is equipped with splendid ables, cupboard, sideboard, etc., all of solid oak, the dining room with mahogany furniture, including a large round table 8 feet in diameter, 12 upholstered chairs, parquet floor, etc., all done by Indian boys. In this department the girls give daily demonstrations of work in laundering, cooking, and dining-room service.

Next we have a fully equipped printing department, in which is published a daily paper called the Indian School Journal, copies of which are given to visitors. These departments attract an immense amount of interest.

Then comes a wagon making department, a blacksmithing department, a carpenter and manual-training department, a sewing department, and a harness-making department, all fully equipped, in daily operation, and conducted as they are at our schools.

In the assembly hall a kindergarten class recites morning and afternoon, followed by a class of seventh-grade students. Band concerts are given from the portico from 9 to 11 a. m., and from 1.30 to 3.30 p. m., each day, and a literary and musical pro gramme is rendered by the students daily from 4 to 5.

This is the daily program:

MORNING.		AFTERNOON.	
Reveille	6.00	Band concert	1.30– 3.30
Flag salute	6.45	Industrial work	2.00– 4.00
Breakfast	7.45	Kindergarten	2.00– 3.00
Children's irrigated gardens	7.30– 8.30	Literary class work	3.00– 4.00
Band concert	9.30–11.30	Literary and musical program	4.00– 5.00
Industrial work	9.30–11.30	Flag salute and dress parade	5.30
Kindergarten	9.30–10.30	Supper	6.00
Literary class work	10.30–11.30	Taps	10.00
Dinner	12.00		

The old Indians live in homes constructed so nearly as possible in realistic fashion on the plaza in front of the school building. Beginning at the left of the semicircle we have a native bark house constructed by the Kickapoo from Kansas; next a Pima (Arizona) native home; then a Maricopa (Arizona) abode; three Navaho (New Mexico) hogans; a group of Arapaho and Cheyenne tepees; a Pawnee ceremonial mud lodge; a Wichita grass lodge, etc.; the Acoma Pueblo; the Pomo (California) home; the Santa Clara (New Mexico) pueblo house; the Jicarilla Apache house; the Sioux (South Dakota) village; and last the Chippewa village.

These native homes attract a great deal of attention, especially the Kickapoo, Navaho, Pawnee, and Wichita houses, and present a striking illustration of the old-time Indian ideas of architecture and construction, besides giving a strong contrast between the old and the new. In fact the entire exhibit is one that excites wonder, which grows rapidly into absorbing interest. As one watches the faces of visitors one can almost see the scales drop from their eyes. Prejudice against the Indian disappears, and as the visitors pass from one side of the hall to the other, observing critically the work done by the old Indians and the students, they exclaim, as they pass along, that the Indian is equal to any other race, and the only difference between them and other people is that of development. They realize that the Indian's talents are the same as the white man's talents, except that in the one they lie dormant. They realize that education developes these talents, and when developed the Indians are prepared to cope successfully with life's problems. They leave the building with their minds freed of the belief that the money spent on the education of the Indian is wasted. They know now, because they have seen with their own eyes, that the Indians will work; that they are ordinarily endowed physically, mentally, spiritually; that they are not abnormal in any sense; that both boys and girls are well

favored; that they can talk; that they can sing; that they can learn; that they are docile and obedient; that they are human.

Verily the St. Louis Indian School may well be called the Hall of Revelation.

The Indian exhibit is the talk of the city of St. Louis and of the exposition. Distinguished educators from America and foreign countries, here to study our educational system, especially representatives of England, France, and Germany that have to deal with primitive people in their extensive and distant colonies, come, stay to study, and go away satisfied that our Government is doing the right thing for its wards in the right way.

The attendance has been most gratifying, thousands visiting the school and exhibit daily.

SALE OF LIQUOR TO INDIANS.

My last annual report pointed out the necessity of having a fund for use in prosecuting violators of the law which forbids the sale of liquor to Indians and for the employment of detectives to obtain evidence against liquor sellers. With this in view Congress was asked for $10,000, but the appropriation was not made.

The past year's experience only emphasizes the necessity for such a fund. Prosecutions are dependent entirely on the Department of Justice, whose funds are insufficient to attend to all the cases that arise. Hence only the more flagrant violations can receive attention, and minor offenses are often passed over. The result is that matters drift until the situation becomes specially bad at some particular point. When this occurs the Department of Justice, on request of the Department of the Interior, details a special agent to attend to the matter. Usually the result is all that could be desired; but such prosecutions being only occasional are therefore unsatisfactory. If the evidence was first obtained the Department of Justice could attend successfully to the minor cases that now go by default. The only way to success in breaking up this traffic is to prosecute the first offense, be it great or small, and to look after all violations as fast as they occur.

A number of convictions have been secured during the past year, but in some localities conditions have not improved; indeed, the sales of liquor to Indians seem to have increased at some points, due largely to local conditions and the present inability of this Office to obtain the evidence necessary to convict.

Congress will again be asked to provide a fund for the use of the Office for the purpose of taking the preliminary steps to secure the conviction of offenders. If the request is granted it is believed that, in addition to the direct results secured, the agitation that will naturally result from the efforts to obtain testimony and conviction will arouse local interest, and thereby induce good citizens to help prosecute those guilty of engaging in this nefarious traffic.

ALLOTMENT AND PATENTS.

The progress in allotment work since the last annual report is as follows:

ALLOTMENTS ON RESERVATIONS.

During the year patents have been issued and delivered to the following Indians:

Sioux, Lower Brulé Reservation in South Dakota	548
Sioux, Rosebud Reservation in South Dakota	1
Kaw in Oklahoma (deeds for additional land)	247

Allotments have been approved by this Office and the Department as follows:

Chippewa of Lake Superior:	
Bad River Reservation, Wis	4
Lac du Flambeau Reservation in Wisconsin	115
L'Anse and Vieux Désert Reservation in Michigan	37
Chippewa of Minnesota on the Chippewa Reservation	107
Muckleshoot Reservation in Washington	37
Prairie Band of Potawatomi in Kansas	116
Omaha in Nebraska	7
Sioux, Devils Lake Reservation in North Dakota	61

* * * * * * *

SALES OF INDIAN LANDS.

Inherited lands.—The first sale of inherited lands under section 7 of the act of May 27, 1902, and the amended rules of October 4, 1902, prescribed thereunder, was approved March 4, 1903. From that date to September 15, 1903, as stated in the last annual report of this Office, there were sold 44,493.99 acres for the aggregate sum of $757,173.25, being an average of 6,810.30 acres per month. From September 15, 1903, to June 30, 1904, the approved sales have averaged 8,182 acres per month, being an increase of 20 per cent. The average price obtained prior to September 15, 1903, was $17.01 per acre, and since that date to June 30, 1904, it has been $16.83 per acre, as will be seen from the table on page 66.

From reports of agents and special agents it appears that in most cases fair prices are being received for the lands. It is noted, however, that the sales are made to a very great extent to the same persons, indicating that the lands are generally being purchased for their speculative values, and not directly by those who want them for homes, the Indian owners thereby losing the difference between the speculative value and the value of the lands to the homeseeker. As suggested in my last year's report, this condition could be changed by disposing of the lands on time, the consideration money to be paid in annual installments covering a period of from ten to fifteen years.

Under present conditions, so far as the Indian is concerned, the sale of these lands produces few beneficial results, but, on the contrary, has brought about conditions so detrimental to the Indians' welfare and so demoralizing to the community in general as to call for immediate and serious consideration. To the average land speculator the Indian seems to be considered common prey, and there has been disclosed through the reports of special agents designated to make investigations, the existence of cliques and combinations of schemers in the vicinity of nearly every agency where large quantities of lands are being sold, who, by various means fleece the Indian of the last penny within a few hours after the agent has turned over to him the proceeds of a sale.

Upon receipt of advice of the approval of a deed members of some combination approach the Indian who is to receive the money and engage him in all manner of contracts whereby the money coming to him from the sale of his land is transferred to the pockets of the combination. In one specific case related by Special Agent McNichols in his report of the 21st of July, which was transmitted to the Department August 1, all the Indian finally received was a broken-down horse and carriage and a few chips and stones.

So small a portion of the proceeds from the sale of inherited lands is used by the Indians in improving their own allotments that the benefits thus derived are hardly entitled to consideration. The Office has no detailed report of these expenditures for improvements except with respect to the Omaha Indians in Nebraska. During the past three years improvements to Omaha allotments have been made in 57 separate cases at a cost estimated at $44,400. The Omahas are one of the most progressive tribes, yet it is shown that out of a total of approximately $147,150 received by the Omahas from the sale of inherited lands and the large sums received on leased Omaha lands, estimated at $72,000 in three years, less than 20 per cent was expended in improvements.

This showing is probably far ahead of any that can be made by any other tribe. It is doubted if the Yankton Sioux in South Dakota can show improvements of one-fourth this value, though they have received from the sale of inherited lands from March 4, 1903, to June 30, 1904, a period of sixteen months, the sum of $238,775.55. This amount went to the heirs of 178 estates, and several of the estates or separate tracts were sold by the same heirs. It is known that by far the greater part of this money was dissipated by the possessors of it in riotous living to their immediate injury and indirectly to the injury and demoralization of the white community surrounding the agency.

If it is deemed advisable, all things considered, to continue the sale of inherited lands for all cash, the disposition of the proceeds should be restricted. The plan suggested in my last report of disposing of this land on time, the purchase price to be paid in installments for ten or fifteen years, has some disadvantages. It would entail upon agents a great amount of additional labor in keeping accounts and would probably require the employment of additional clerical force at those agencies where large quantities of land are being sold. In addition to this it would work a hardship upon the provident Indians who might be trusted to expend the money derived from the sale of lands in improving their own allotments.

In Office letter of August 1 there was recommended to the Department a plan for conserving the proceeds from the sales of inherited Indian lands at the Yankton Agency, a plan which could be extended to other agencies as occasion demanded. This plan was that Department regulations approved October 4, 1902, be amended so as to require, in the discretion of the Commissioner of Indian Affairs, that the Indian heir or heirs petitioning for the sale of inherited Indian lands shall agree that the proceeds shall be placed by the Secretary of the Interior with the most convenient United States depository, subject to the check of the Indian heir or owner, but only in amounts not to exceed $10 in any one month, and only when approved by the United States Indian agent or other officer in charge of the agency, and for sums in excess of $10 per month only upon the approval of the Commissioner of Indian Affairs, the approval in each case to be endorsed upon the check.

September 8, 1904, the Assistant Attorney-General submitted an opinion with respect to the legality of the remedy suggested in Office letter of August 1, as follows:

The Commissioner of Indian Affairs having called attention in his report of August 1, 1904, to the deplorable condition existing at the Yankton Agency, S. Dak., arising

out of the sale of inherited lands by Indians, the matter has been referred to me for opinion as to proper legal remedy for the wrongs complained of.

It appears from a report of a special agent that the money received by Indians from sales of their land is usually dissipated and squandered within a few days after its receipt. An Indian having land for sale is induced to purchase articles not needed by him at exorbitant prices, and to otherwise incur debt without adequate consideration. Even when this is not done the Indian has shown himself as a rule wholly incapable of saving or caring for his money.

The Commissioner of Indian Affairs recommends that the regulations for sale of inherited lands be amended, so far as this agency is concerned, to require Indian heirs petitioning for sale of land to agree that the proceeds shall be placed with the nearest and most convenient United States depository, subject to the check of the Indian, for amounts not exceeding $10 in any one month, and only when approved by the agent in charge of such agency and for sums in excess of $10 in any one month only upon approval of the Commissioner of Indian Affairs.

All sales made under the act of May 27, 1902 (32 Stat., 247, 275), are subject to approval by the Secretary of the Interior, and there seems to be no doubt as to your authority to prescribe such a rule as is recommended by the Commissioner of Indian Affairs. These Indians are still in charge of an agent and remain wards of the Government. The principle involved is the same as that in the case of control of money derived from the sale of timber from Chippewa allotted lands. The authority of the Secretary to control that money was sustained by the court of appeals of the District of Columbia in the case of Hitchcock, Secretary, etc., *v.* Bigboy, decided June 25, 1903. The reasons leading to the conclusion reached in that case are equally potent to sustain the authority proposed to be exercised here.

The general conditions at the Yankton Agency, as depicted by the special agent, and the particular cases described by him, show conclusively the urgent need of immediate action in the premises.

After consideration of this matter, I am of opinion that the recommendation of the Commissioner of Indian Affairs should be approved and action taken in accordance therewith. As to the details involving the amount of money that may be drawn in any one month with the approval of the agent, etc., I express no opinion because they are matters with which the administrative office is more familiar than is this office. I am quite convinced, however, that the money received from sales of these lands should be so placed that it may not be drawn except upon check countersigned by the agent or some other officer of the Government. The subject of a permanent investment of these funds to secure an income to the Indian therefrom is a matter that may be considered and decided hereafter.

This opinion was approved by the Department September 8 and September 12.

September 16 the Office submitted an amendment to paragraph 1 of section I of the rules approved October 4, 1902, so as to apply them to the inherited Indian lands at Yankton Agency. The amendment was approved by the Department September 19 and was made to apply to all agencies.

The paragraph, as amended, reads as follows:

I. (1) Owners of such inherited Indian lands desiring to sell the same may petition the Indian agent, or other officer having charge, within whose territorial jurisdiction the land is located, praying that the land therein described may be sold under said act in accordance with the regulations, and agreeing that the proceeds to be derived therefrom shall be placed with the nearest and most convenient United States depository to the credit of each heir in proper proportion, subject to the check of such heirs, or, in the case of minors, subject to the check of their recognized guardians, for amounts not exceeding $10 to each in any one month when approved by the agent or other officer in charge, and only when so approved, and for sums in excess of $10 per month upon the approval of such agent only when specifically authorized by the Commissioner of Indian Affairs. The petition shall be signed by all the lawful heirs, and, in case of minors, by their legal representatives, and shall set forth every material fact necessary to show full title under the laws applicable.

All agents or other officers in charge of agencies where inherited Indian lands are being offered for sale have been instructed as to how to proceed under the foregoing amendment, and the Office has reason

to believe the remedy afforded will prove effective in bringing about better conditions. Some complaints have been received from persons to whom the Indians have become indebted. All such complainants have been informed that where transactions with Indians have been honestly conducted no apprehension need be felt as to satisfactory settlement.

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LAND SCRIP ISSUED BY INDIAN OFFICE.

Recently request was made that the General Land Office be furnished with a statement of land scrip issued by this Office, giving the acts of Congress under which it was issued, number of pieces, different series, and area of land called for under each series. This information was desired for the use of the Public Land Commission appointed by the President for the purpose of examining into the operation of the present land laws.

* * * * * * *

INDIAN LANDS SET APART TO MISSIONARY SOCIETIES AND CHURCHES.

Tracts of reservation lands set apart during the past year for the use of societies and churches carrying on educational and missionary work among the Indians are as follows:

TABLE 15.—*Lands set apart on Indian reservations for the use of religious societies, from August 15, 1903, to August 15, 1904.*

Church or society.	Date.	Acres.	Location.
Domestic and Foreign Missionary Society.	Aug. 20, 1903	5.38	Cheyenne River Agency, S. Dak.
Presbyterian Church	Oct. 13, 1903	3	Southern Ute Agency, Colo.
Roman Catholic Church	Oct. 30, 1903	100	Island in San Juan River, New Mexico.
Protestant Episcopal Church	Sept. 5, 1903	160	Pine Ridge Agency, S. Dak.
Methodist Episcopal Church	Jan. 12, 1904	2	Walker River Reservation, N. Mex.
Woman's Home Missionary Society, Methddist Episcopal Church.	Feb. 25, 1904	14	Pawnee Agency, Okla.
Roman Catholic Church	Mar. 23, 1904	.34	Tulalip Agency, Wash.
Moravian Church	Mar. 30, 1904	.22	Rincon Reservation, Cal.
Roman Catholic Church	June 14, 1904	5	Crow Creek Agency, S. Dak.
Mennonite Church	June 28, 1904	40	Tongue River Agency, Mont.
Methodist Episcopal Church	....do....	80	Fond du Lac Reservation, Minn.
"Mission to the Navaho Indians" (interdenominational).	July 27, 1904	40	Moqui Reservation, Ariz.
Protestant Episcopal Church	Aug. 4, 1904	2	Fort Hall Agency, Idaho.
Board Home Missions, Presbyterian Church.	Aug. 8, 1904	40	Fort Belknap Reservation, Mont.

March 22, 1904, the Department granted authority for St. Stephen's Catholic Mission on Wind River Reservation, Wyo., to extend its irrigation ditch about a mile along Little Wind River and across Indian lands in order to provide a water supply for the mission.

March 23, 1904, the Office granted permission to the National Indian Association, of Philadelphia, Pa., to use temporarily the old abandoned Government adobe buildings situated on the north side of the plaza and in the center of the Camp McDowell (Ariz.) Indian Reservation for the purpose of a public library, reading room, chapel, and social hall for the benefit of the Indians.

May 11, 1904, the Department granted authority for the temporary use by the trustees of the public school district of Rosebud County, Mont., for public school purposes, of one-half of an acre on the Crow Reservation, Mont.

May 21, 1904, authority was granted by the Department for the temporary use by the War Department of about 20 acres of land on the Umatilla Reservation, Oreg., as a target ground for the United States troops at Fort Walla Walla, Wash.

LOGGING ON INDIAN RESERVATIONS.

La Pointe Agency—Lac du Flambeau Reservation, Wis.—September 28, 1892, the President approved rules to govern the sale of timber on the allotted lands of the Lac du Flambeau Reservation. The authority for the sale of the timber was granted under the provisions of the treaty of September 30, 1854. J. H. Cushway & Co. is the authorized timber contractor. As a general rule, the contracts expired ten years from the date of their approval. During the past year several approved timber contracts covering allotted lands within the Lac du Flambeau Reservation expired, and the question arose as to whether the timber contractor should be allowed to renew the expired contracts at prices agreed to be paid in 1892 or whether the contractor should be required to pay a higher rate. By the provisions of the original contract the contractor was required to pay annually to the Indian agent for the use of the allottee, beginning one year from the date of the contract until such time as the timber had been cut and removed from the land, a sum equal to 5 per cent of the contract price of the timber, upon an estimate to be made by a competent estimator, to be agreed upon between the parties to the contract. After all phases of the renewal proposition had been considered it was finally decided to authorize the Flambeau Lumber Company, which had succeeded to the interests of J. H. Cushway & Co., to renew the expired contracts at prices as follows:

	Per M.		Per M.
Merchantable white pine	$7.00	Elm	$2.00
Norway pine	7.00	Maple	3.00
Hemlock	1.50	Birch	2.50
Merchantable basswood	4.00	Oak	6.00

The extension agreement provides, however, that the Flambeau Lumber Company "shall be allowed enough timber at the prices named in said original contract to equal the amount of cash heretofore advanced thereon, with the exception that all white pine under this part of the agreement shall be paid for at the rate of $4 per M, and all Norway pine at $2 per M for merchantable timber." During the past year 4 timber contracts between Lac du Flambeau allottees and the authorized contractor have been approved under the original authority, and 46 extension agreements have been approved under the new authority.

Bad River Reservation, Wis.—December 6, 1893, in accordance with the treaty above mentioned, the President approved rules for the sale of timber on allotted lands of the Bad River Reservation. These rules are similar to the rules of September 28, 1892, applicable to Lac du Flambeau allotted lands. Justus S. Stearns, of Ludington, Mich., is the authorized contractor. As shown by my last annual report, 392

new allotments were made on the Bad River Reservation during the years 1901–2, and Mr. Stearns was authorized to enter into timber contracts with such of the allottees as might desire to sell their timber to him under regulations approved by the President December 29, 1902, as modified by the form of approval. Sixteen contracts covering allotted lands on the Bad River Reservation have been approved during the year.

Red Cliff Reservation, Wis.—July 29, 1897, the Secretary of the Interior, under the treaty of September 30, 1854, and joint resolution of Congress of February 20, 1895, approved rules to govern the sale of timber on the allotted lands of the Red Cliff Reservation. Frederick L. Gilbert, of Duluth, Minn., is the authorized contractor; 12 contracts covering allotted lands on this reservation have been approved since my last annual report.

Lac Courte Oreille Reservation, Wis.—Messrs. Signor, Crisler & Co. are the authorized timber contractors on this reservation. Allottees are allowed to enter into timber contracts with the authorized contractors as provided by the President's regulations of December 11, 1902. Such contracts are subject to the approval of this Office; 53 contracts have been approved.

Grand Portage Reservation, Wis.—The act of February 12, 1901 (31 Stats., 785), authorized the Indians of the Grand Portage Reservation to dispose of the timber on their respective allotments. October 2, 1901, regulations were approved by the Department to govern the sale of the timber on the allotted lands of this reservation. The regulations were to be in force for one year from the date of their approval, unless sooner modified or revoked by the Department. They have been extended from time to time to expire October 2, 1904. Under these regulations allottees are permitted to dispose of all timber standing or fallen, except the standing pine. The timber operations on this reservation as on all of the others under the La Pointe Agency have been satisfactorily conducted.

Leech Lake Agency, Minn.—July 16, 1902, Maj. G. L. Scott, U. S. Army, acting United States Indian agent, Leech Lake Agency, forwarded to this Office a communication addressed to him by Daniel Sullivan, superintendent of logging of the agency, in which it was stated that on the night of July 5, 1902, a heavy wind storm passed over a portion of the Red Lake diminished reservation and blew down white and Norway pine, amounting in the aggregate to about 5,000,000 feet. Major Scott suggested that the timber be disposed of for the benefit of the Indians if there was any authority of law under which it could be done. September 2 and 20, 1902, the matter was brought to the attention of the Department, and September 20 it was recommended that the sale of the blown-down timber be authorized in accordance with the provisions of the act of February 16, 1889 (25 Stats., 673). A draft of regulations to govern the operations was transmitted, and it was recommended that the Indians of the Red Lake diminished reservation be authorized to do the logging, and that with their consent $20,000 of the money to their credit, being part of the proceeds from the sale of timber on the ceded lands, under the act of June 7, 1897 (30 Stats., 62, 90), be used for this purpose, the fund to be reimbursed from the sale of the blown-down timber. October 3, 1902, the President approved the regulations, but the Red Lake Indians positively refused to agree to the use of their stumpage money for logging pur-

poses, and consequently no logging operations were conducted on that reservation during the logging season of 1902–3.

May 21, 1903, Major Scott again brought the subject to the attention of the Office, and on May 28 it was recommended that he be authorized to dispose of the timber referred to, on sealed proposals, after due public notice in newspapers of general circulation in Minnesota, Wisconsin, Michigan, and Illinois. July 24, 1903, the Department approved this recommendation, and September 7 regulations to govern the sale were approved by the President. The Grand Forks Lumber Company was the highest bidder and was awarded the contract at its bid of $4 per thousand for white pine and $3 per thousand for Norway pine. The timber operations were very successfully conducted and netted the Red Lake Indians $30,000.

September 21, 1903, Major Scott made a report concerning blowndown timber on another part of the reservation. The sale of this timber was also authorized in accordance with the act and regulations mentioned. W. A. Gould, of Bemidji, Minn., was awarded the contract at his bid of $5 per thousand feet for merchantable white pine, and $4 per thousand feet for merchantable Norway. The timber covered by this contract has not yet been cut.

White Earth Diminished Reservation, Minn.—Early in December, 1903, Simon Michelet, United States Indian agent, reported to this office that on September 12 a terrific storm swept over the pine region of the White Earth Reservation and blew down considerable timber on townships 141 to 146, inclusive, ranges 37, 38, and 39. December 21 recommendation was made that the Department request authority from the President to dispose of the timber under the act of February 16, 1889, and draft of regulations to govern the cutting and sale was transmitted. December 29 the President approved the regulations and authorized the sale. Under the regulations contracts were awarded only to Indians of the White Earth Reservation; white people were not allowed to have timber contracts. The operations were satisfactorily conducted and show a profit of $19,289.40.

Chippewa allotments in Minnesota.—The act of April 21, 1904 (33 Stats., 189), contains a paragraph authorizing the disposition of timber on Chippewa allotments in Minnesota as follows:

> The Chippewa Indians of the State of Minnesota to whom allotments have been or shall hereafter be made, and trust or other patents, containing restrictions upon alienation issued or which shall hereafter be issued therefor are, with the consent of the Secretary of the Interior and under such rules and regulations as he may prescribe, hereby authorized to dispose of the timber on their respective allotments. Timber on the allotments of minors may likewise be so sold by the father, mother, or Indian agent or other officer in charge, in the order named, and the Secretary of the Interior shall make such regulations for the disposition of the proceeds of said sales as may be necessary to protect the interest of said Indians, including such minors.

May 17, 1904, Major Scott recommended that allottees under the supervision of the Leech Lake Agency be authorized to dispose of the timber on their allotments in accordance with the above provision of law. May 28 a draft of regulations was submitted to the Department which provide that allottees may sell the timber on their allotments to the person or company which may purchase the timber on the ceded lands adjoining such allotments. They were approved June 2, as was also form of contract to be entered into by allottees with the purchaser. No contracts have been submitted for approval.

LEASING OF INDIAN LANDS.

ALLOTTED LANDS.

The act of February 28, 1891 (26 Stats., 795), as amended by the acts of August 15, 1894 (28 Stats., 305), June 7, 1897 (30 Stats., 85), March 1, 1899 (30 Stats., 941), and May 31, 1900 (31 Stats., 226 and 229), provides that whenever it shall be made to appear to the Secretary of the Interior that by reason of age, disability, or inability any Indian allottee can not personally and with benefit to himself occupy or improve his allotment, or any part thereof, the same may be leased upon such terms as shall be prescribed by the Secretary, for a term not exceeding three years for grazing or farming and grazing, and five years for farming only or for mining or business purposes, except that improved lands on the Yakima Reservation, Wash., may be leased for not exceeding ten years for agricultural purposes.

The amended rules governing the leasing of allotted lands provide that each able-bodied adult male Indian not engaged in some occupation by which he is gaining a livelihood for himself and family will be required to reserve not less than 40 acres of cultivable land from his own allotment for occupancy and cultivation by himself, which shall always be exempt from leasing; also that those partially but not wholly disqualified by physical infirmities from working will be required to work or manage a part of their allotments, to be determined by the actual conditions in each case.

In both of these cases the allottees will be permitted to receive only a portion of their lease money from that portion of their allotments that may be leased, the remainder to be retained until the expiration of the lease period, whenever in the discretion of the agent or school superintendent such action will not work a hardship to them.

An amendment to the leasing rules, dated October 13, 1903, provides that "no applications for mining leases will be considered by the Department unless specific permission has first been granted by the Department for negotiating for the same with the individual Indians whose lands are sought to be leased."

All approved grazing leases for terms in excess of one year provide for fencing the lands in addition to the cash rental, and all approved farming and grazing leases for terms in excess of two years have provision either for placing some substantial improvements on the premises, or for breaking new lands, or for both. The following list includes all leases approved from October 9, 1903, to September 30, 1904:

* * * * * * *

RAILROADS ACROSS INDIAN LANDS.

During the fiscal year ended June 30, 1904, authority has been granted, under the act approved March 2, 1899 (30 Stats., 990), for the survey and location of lines of railroad, through Indian lands outside of Oklahoma and Indian Territory, as follows:

Albuquerque Eastern Railway.—February 19, 1904, authority was granted this company for the location of a line of railroad through a portion of the lands reserved for the San Felipe Indians in New Mexico, and on the same date a map showing the definite location of the

line was approved. Damages in the sum of $289.05 were assessed and paid for the right of way.

Arizona Eastern Railroad.—This company was authorized, March 17, 1904, to survey and locate a line of railroad across a portion of the White Mountain or San Carlos Reservation in Arizona, and April 14 it submitted for approval a map of definite location, showing a line 10.215 miles in length, extending from a point of connection with the Gila Valley Globe and Northern Railway at San Carlos, westerly along the Gila River to the reservation boundary. One copy of the map was transmitted to the Director of the United States Geological Survey April 18 for information as to whether or not the location of the line would interfere with the operations and plans of the reclamation service. It developed that the location as made was below the contour fixed by the Geological Survey as the limit of its plans of operation. The railway company's engineers have not yet agreed with the engineers of the Geological Survey on a contour line satisfactory to both, and final action with respect to the map has been deferred until such time as the matter can be adjusted.

Peach Springs and Colorado River Railway.—June 25, 1904, this company was authorized to survey and locate a line of railroad through a portion of the Walapai Reservation in Arizona. The line of route is described in the application begins at or near the town of Peach Springs, in Mohave County, intersecting the line of railroad of the Santa Fe Pacific Railroad Company, and extends northerly in that county about 20 miles, terminating at a point near the junction of Diamond Creek and the Colorado River.

Western Pacific Railway.—June 25, 1904, the application for permission to survey and locate a line of railroad through the Pyramid Lake Reservation was approved. The proposed line as stated in the articles of incorporation of the company, filed with its application, is to extend from San Francisco, Cal., to Salt Lake City, Utah, an estimated length of 810 miles. The capital stock is placed at $50,000,000.

Wyoming State Railway.—Permission was granted May 4, 1904, to make survey of a line of railroad through a portion of the Shoshoni Reservation in Wyoming. The capital stock of the company is placed at $10,000,000. The line as authorized extends north and south, and also east and west through the reservation.

Omaha Northern Railway.—By act approved April 26, 1904, the time for the completion of this company's line of railroad through the Omaha and Winnebago reservations in Nebraska, is extended for a period of three years from the 26th day of March, 1904.

Railroads in Oklahoma and Indian Territory.—The consolidation of several of the railroad companies operating in the Indian Territory is authorized by acts of Congress, as follows:

By act approved March 11, 1904 (33 Stats., 66), the Kiowa, Chickasha and Fort Smith Railroad is authorized to sell its properties to the Eastern Oklahoma Railroad, and the latter company is authorized to lease its properties and to sell the Kiowa, Chickasha and Fort Smith Railroad (in the event it purchases the same), to the Atchison, Topeka and Santa Fe Railroad Company.

By act approved April 27, 1904 (33 Stats., 314), the Ozark and Cherokee Central Railroad Company and the Arkansas Valley and Western Railway Company are authorized to sell and convey to the St. Louis and San Francisco Railroad or to the Chicago, Rock Island and Pacific

Railroad. The former may sell all that part of its railroad extending from Lafayette, Ark., to Okmulgee, Ind. T.; the latter may sell all of its railroad extending from Tulsa Junction, Ind. T., to Enid and Avard, Okla.

By act approved April 21, 1904, the Missouri, Kansas and Oklahoma Railroad is authorized to sell to the Missouri, Kansas and Texas Railroad, and the latter company is authorized to purchase the railway of the former company, extending from Stevens, in the Cherokee Nation, Ind. T., to Guthrie, Okla.; and from Osage Junction, in the Osage Nation, Okla., to Wybark, in the Creek Nation, Ind. T.; and from Falls to Oklahoma City, Okla., and from Oklahoma City, Okla., to Lehigh, Choctaw Nation, Ind. T. The line from Okalhoma City to Lehigh was constructed under the name of the Texas and Oklahoma Railroad Company, as shown by maps of definite location filed in this Office under the act of February 28, 1902.

By deed of conveyance filed for record in the Department of the Interior, the Midland Valley Railroad has purchased the line of railroad and the franchise, in the Indian Territory, of the Muskogee Southern Railway Company. This line of road, as shown by maps of definite location of both companies on file in this Office, extends through Indian Territory from a point on the eastern boundary thereof, in township 8 north, range 27 east, northwesterly to Muskogee; thence to Tulsa along the valley of the Arkansas River, and thence northerly through townships 20 and 21 north, range 12 east.

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TELEPHONE AND TELEGRAPH LINES IN INDIAN TERRITORY.

Some difficulty has been experienced in securing settlement of damages and payment of annual charges assessed against telephone and telegraph companies operating in Indian Territory under section 3 of the act of March 3, 1901 (31 Stats., 1050–1083).

Many of these companies, on one pretext or another, have failed to make settlement, and notice has been given that unless satisfactory settlement is made such delinquent companies will be required to cease operations. It has been very difficult to keep track of operations of this character, and frequently information reaches the Office, through indirect channels, of the existence of telephone lines of which no former knowledge was had. Numerous short lines are maintained by individuals or associations of individuals for their private and personal uses, and the owners of such lines believe they do not come under the provisions of the act of March 3, 1901.

Several of the longer lines are being consolidated under a single corporation, most notable of which is the Pioneer Telephone and Telegraph Company. This company has perfected an organization, as the office is informed, to take over the lines of the companies with mileage as shown upon approved maps, as follows:

	Miles.
Pioneer Telephone and Telegraph Company	68.49
Muskogee National Telephone Company	144.39
North American Telephone and Telegraph Company	479.47
Indian Territory Telephone Company	128.16
Weleetka and Fort Smith Telephone Company	130.00
Arkansas Valley Telephone Company	278.42
Total mileage	1,228.93

Other companies operating lines in Indian Territory and the mileage of the several lines, as shown upon approved maps, are as follows:

	Miles.
H. C. Acuff Telephone Line	45.00
J. W. Breedlove Telephone Line	158.00
W. H. Gates Telephone Line	69.00
Claremore Telephone Company	81.00
Choctaw Telephone Company	212.00
Chickasaw-Choctaw Telephone Company	99.26
J. N. Coulter Construction Company	25.50
Cherokee Telephone Company	33.30
J. E. Campbell Telephone Line	10.00
Chickasaw Telephone Company	162.00
J. T. Earnest Telephone Line	20.00
L. T. Hine (Purcell-Lexington) Line	73.00
Indianola Telephone and Construction Company	38.30
Missouri and Kansas Telephone Company	43.36
Poteau Telephone Company	36.65
South McAlester-Eufaula Telephone Company	151.08
Stonewall-Ada Line	12.00
H. R. Strother Line	65.00
Topeka-El Reno Telephone Company	21.77
W. H. Thomas Telephone Company	7.61
Washita Valley Telephone Company	15.41
Welch Artesian Well, Light, and Power Company	20.00
Total	1,399.24
Total mileage of approved lines	2,628.17

In addition to the above there are several lines being operated for which no maps have been submitted for approval. The mileage of these lines is approximately as follows:

	Miles.
Dorchester Telephone Company	33.00
Fort Sill, Texas, and Oklahoma Telephone Company	85.00
Quick Service Telephone Company	78.00
South McAlester-Eufaula Company (mileage for which no maps have been filed)	90.92
Spencer Telephone Company	41.00
Tishomingo-International Telephone Company	121.00
Total	448.92
Total mileage of all lines (approximated)	3,077.09

OIL AND GAS PIPE LINES THROUGH INDIAN LANDS.

The following act of Congress, approved March 11, 1904 (33 Stats., 65), authorizes the Secretary of the Interior to grant rights of way through Indian lands for pipe lines for the conveyance of oil and gas.

That the Secretary of the Interior is hereby authorized and empowered to grant a right of way in the nature of an easement for the construction, operation, and maintenance of pipe lines for the conveyance of oil and gas through any Indian reservation, through any lands held by an Indian tribe or nation in the Indian Territory, through any lands reserved for an Indian agency or Indian school, or for other purpose in connection with the Indian service, or through any lands which have been allotted in severalty to any individual Indian under any law or treaty, but which have not been conveyed to the allottee with full power of alienation, upon the terms and conditions herein expressed. No such lines shall be constructed across Indian lands, as above mentioned, until authority therefor has first been obtained from, and the maps of definite location of said lines approved by, the Secretary of the Interior: *Provided*, That the construction of lateral lines from the main pipe line establishing

connection with oil and gas wells on the individual allotments of citizens may be constructed without securing authority from the Secretary of the Interior and without filing maps of definite location, when the consent of the allottees upon whose lands oil or gas wells may be located and of all other allottees through whose lands said lateral pipe lines may pass has been obtained by the pipe-line company: *Provided further*, That in case it is desired to run a pipe line under the line of any railroad, and satisfactory arrangements can not be made with the railroad company, then the question shall be referred to the Secretary of the Interior, who shall prescribe the terms and conditions under which the pipe-line company shall be permitted to lay its lines under said railroad. The compensation to be paid the tribes in their tribal capacity and the individual allottees for such right of way through their lands shall be determined in such manner as the Secretary of the Interior may direct, and shall be subject to his final approval. And where such lines are not subject to State or Territorial taxation the company or owner of the line shall pay to the Secretary of the Interior, for the use and benefit of the Indians, such annual tax as he may designate, not exceeding five dollars for each ten miles of line so constructed and maintained under such rules and regulations as said Secretary may prescribe. But nothing herein contained shall be so construed as to exempt the owners of such lines from the payment of any tax that may be lawfully assessed against them by either State, Territorial, or municipal authority. And incorporated cities and towns into and through which such pipe lines may be constructed shall have the power to regulate the manner of construction therein, and nothing herein contained shall be so construed as to deny the right of municipal taxation in such towns and cities, and nothing herein shall authorize the use of such right of way except for pipe line, and then only so far as may be necessary for its construction, maintenance, and care: *Provided*, That the rights herein granted shall not extend beyond a period of twenty years: *Provided further*, That the Secretary of the Interior, at the expiration of said twenty years, may extend the right to maintain any pipe line constructed under this act for another period not to exceed twenty years from the expiration of the first right, upon such terms and conditions as he may deem proper.

SEC. 2. The right to alter, amend, or repeal this act is expressly reserved.

Prior to this enactment there was no authority of law for the granting of permission for the construction and maintenance of oil and gas pipe lines through Indian lands. The necessity for such a law was brought to the attention of the Department through the application of the Prairie Oil and Gas Company, filed in this Office November 16, 1903, for permission to construct and maintain oil pipe lines through the oil fields in the Osage Nation, Oklahoma, and Cherokee Nation, Indian Territory.

Following the suggestions contained in the opinion of the Assistant Attorney-General accompanying Department letter of April 7, 1904, the Office submitted, April 8, a draft of regulations to govern in the matter of applications under the act. They were approved April 12, and have since been put in force.

The Prairie Oil and Gas Company has been granted rights of way through portions of the Osage, Cherokee, and Creek nations for the construction and maintenance of pipe lines for the conveyance of oil from the fields in Osage Nation, and at Chelsea, Cherokee Nation, and also has been authorized to take grounds for pumping stations in the Osage and Cherokee nations. Damages for right of way and pumping stations have been assessed and paid.

May 2, 1904, Messrs. Guffey & Gailey were granted permission to construct and maintain a gas pipe line extending from the town of Tulsa, Creek Nation, to a gas well situated in the southeastern part of the Osage Nation. Damages have been assessed and paid on the right of way granted.

INDIAN TERRITORY UNDER THE CURTIS ACT AND SUBSEQUENT LEGISLATION.

In the discussion of matters in the Indian Territory those coming under the Indian agent will be first discussed; second, those coming under the supervision of the inspector for the Indian Territory, and third, those over which the Commission to the Five Civilized Tribes has control.

EDUCATION.

The general conduct of educational matters among the Five Civilized Tribes during the year has been satisfactory. It is not believed, however, that the best results can be accomplished under the dual control of schools now in existence. Supt. John D. Benedict and his assistants, have, however, endeavored to utilize the material at hand and their work has been satisfactory. The personnel of the teachers has improved under the watchful care of Superintendent Benedict, and the development of the summer normal schools has created a healthy spirit of emulation. An attendance of 90 per cent of the teachers was secured. Notwithstanding indifference and petty prejudices the school attendance has been somewhat better than in previous years. A consolidation of schools has concentrated the energies of the teachers and has been of manifest advantage. No white children are admitted to any of the academies or boarding schools, but in the Choctaw, Cherokee, and Creek Nations they may be admitted to day schools by paying a dollar per month. The Chickasaw Nation does not permit white children in the schools. Generally speaking, the schools are under the direction of the Department of the Interior, but certain tribal laws are recognized.

Public schools can be located only in incorporated towns. Even these are in many instances insufficiently supported out of the proceeds of taxation of personal property. Out in the country there are a few private schools for whites supported by subscription. Mission schools are maintained partly by tuition and partly by aid from the religious denominations conducting them.

Teachers in the tribal day schools receive from $30 to $50 per month for terms of nine months. A few teachers in some of the academies receive as high as $100 per month.

The greatest need of the Indian Territory is industrial training in its schools. Superintendent Benedict recognizes this deficiency, but can make little headway under the present dual control of the schools.

Needs of the Territory.—With about a year more to run, the tribal governments must close and all tribal funds be distributed and all tribal relations extinguished. Schools will then be abolished and buildings disposed of. These agreements provide that all Indian land shall be nontaxable. "How, then," Superintendent Benedict seriously asks, "are the 15,000 Indian children of the Territory to be educated after March, 1906? From whence will the $450,000 which is annually expended upon the education of these Indian children be obtained after tribal funds are exhausted? What will then become of the 650 Indian orphans now being clothed, fed, educated, and cared for in these academies?"

Will the General Government take up the work of education, paying for same out of moneys provided out of the United States Treas-

ury? Will it allow the Five Civilized Tribes to dissipate their present enormous wealth, which is sufficient to create for them a great educational trust fund, and then ask the people of the United States to assume the debt which these Indians themselves owe to their innocent children? With the funds which will come to them on the breaking up of the tribal governments there will be nothing left for the maintenance of schools for the younger generation of Indians. It will be a question then whether these Indians will become the vagabonds of the Territory, or the white people prove an exception to the older States and assume the burden of educating its Indian children regardless of the nontaxability of Indian land. Congress must face the issue, and decide upon the wisdom of permitting the Indians to throw away funds sufficient to maintain their schools through a series of years. It will be a live issue in the Territory. The remedy can be applied now; delayed, it will impose untold and unnecessary burden either upon the General Government or upon the white people inhabiting this section of the country.

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SETTLERS ON THE NORTHERN CHEYENNE RESERVATION, MONT.

The Indian appropriation act approved March 3, 1903 (32 Stats., 982), appropriated $2,965 for payment of settlers for improvements upon certain lands situated within the boundaries of the Northern Cheyenne Reservation, Mont. The Office is pleased to state that deeds approved by the Department have been obtained from the settlers who were reported last year as still lingering on that reservation. As accounts in favor of the respective settlers for their lands and improvements have been stated in this Office and forwarded to the Treasury Department in order that warrants might be drawn, it is presumed that each settler has been paid before this time. They have all removed from the reservation and the lands occupied by them and by other settlers who had previously been bought out have been placed in the possession of worthy and industrious Indians. According to the report of the agent, the Indians are making good use of these lands, and in fact of the entire reservation; there is therefore some hope now for improvement among these Indians whose progress in civilization has hitherto been very slight.

WALKER RIVER RESERVATION, NEV.

The Indian appropriation act, approved May 27, 1902 (32 Stats., 260), contains a paragraph providing for the allotment of lands to the Indians of the Walker River Reservation in certain quantities and the construction of irrigation ditches; and it also provides that when such allotments shall have been made, and the consent of the Indian obtained to the relinquishment of the remaining lands, the President shall, by proclamation, open the relinquished lands to settlement to be disposed of under existing laws.

The Indian appropriation act of March 3, 1903 (32 Stats., 997), made an appropriation for the necessary surveying and other expenses in connection with the Walker River allotments, and on February 5, 1904, this Office recommended that the General Land Office be authorized to

make contract for the survey of the lands necessary for allotment in severalty to the Indians and for grazing purposes. The Office is informally advised that such contract has been made.

NEW YORK INDIANS.

No progress has been made in the effort to have these Indians allotted in severalty. The Senecas have begun proceedings before the courts to determine the status of the Ogden Land Company's claims. As they were unwilling to let the Department of Justice conduct the litigation, attorneys were employed by them under an approved contract, and it is hoped that this long-standing claim will be finally disposed of in the near future.

When this matter is adjudicated there will be still greater need for some litigation similar to that contained in the Vreeland bill, which was introduced in the last two sessions of Congress. The future of the New York Indians is largely dependent on the settlement of their land matters and the breaking up of their present system of land tenure.

PUYALLUP LANDS, WASHINGTON.

Congress at its last session failed to make an appropriation for continuing the services of the Puyallup Commission. On this account, and in order to exercise economy in the use of the Puyallup Indian funds, Clinton A. Snowden, Puyallup Indian commissioner, was instructed to turn over, on June 30, 1904, to the superintendent of the Puyallup Indian School, all the papers and documents relating to the Puyallup Commission and land matters in his possession. The superintendent was instructed to take up July 1 the unfinished work of the Commission, consisting mainly now of the collection of deferred payments due on lands already sold, the sale of unsold lots within the Indian addition to the city of Tacoma, and the appointment of administrators of Indian allottees who have died since March 3, 1903, the date on which the clause restricting the sale of Puyallup allotted lands expired. The superintendent is now engaged in discharging the duties of the Commission.

The Puyallup Indian Reservation adjoins the corporate limits of the city of Tacoma, Wash. It contained 18,061.81 acres of land, of which 598.81 acres comprised what was known as the agency tract, and 17,463 acres were allotted to individual Indians and families occupying the reservation.

The agency tract, except 14.10 acres, as per a prior deed to the Tacoma Land Company, was surveyed, subdivided, and platted as an addition to the city of Tacoma, under the provisions of the Puyallup act approved March 3, 1893 (27 Stats., 633). Three commissioners were appointed by the President to carry out the provisions of that act. They laid out and platted into outlots, school lands, church lots and cemetery lots, blocks, streets, and alleys the following described tracts of land, viz: Lots 5, 6, 7, and 8 of section 3; lots 2, 3, 4, 5, and 6, the northeast quarter of the northwest quarter, the northwest quarter and the south half of the northeast quarter, and the southeast quarter of section 10; lots 3 and 5 and the southwest quarter of southwest quarter in section 11, all in township 20 north, range 3 east, Willamette meridian, Pierce County, Wash., containing, with the

exception above noted, 598.81 acres. This is known as the Indian addition to the city of Tacoma. They donated and dedicated all the streets and alleys of this addition to the use of the public forever, reserving, however, the right to make and maintain a water-supply system in or along any of those streets or alleys for the use of the Indian school and agency.

Within this addition there are 3,600 lots 25 by 130 feet. There are also 22 tracts (known as acre tracts or lots) containing 119.26 acres. Eight of these tracts, containing 62.12 acres, have been reserved for school, farm, and garden purposes, and four of them, containing 19.43 acres, have been reserved for church and cemetery purposes. The remaining 10 tracts, containing 37.71 acres, were appraised for sale, together with the 3,600 lots above mentioned. The streets within this addition are 80 feet wide and the alleys 20 feet. The land reserved for railroads, streets, and alleys, as per plat of survey, aggregates 164.75 acres, and, as already stated, the Tacoma Land Company's deed covers 14.10 acres. There were, therefore, selected for sale, surveyed, and subdivided and platted into lots, blocks, and tracts considered as blocks, 338.41 acres.

On October 28, 1894, the county commissioners of Pierce County, Wash., approved the donation and dedication for the use of the public of the streets and alleys as shown upon the map of the addition.

There were sold of the allotted lands, prior to July 1, 1904, by Commissioner Snowden and the former commissioners, for the use and benefit of the allottees and true owners, 7,027.2685 acres. The consideration was $420,303.83. The amount of cash paid and deferred payments collected, principal and interest, by Commissioner Snowden and his predecessors aggregated $341,200.44.

There were sold up to July 1, 1904, by Commissioner Snowden and the former Puyallup commissioners, 3,187 lots within the Indian addition to the city of Tacoma, and 6 tracts containing 24.82 acres. The consideration therefor was $193,536.61, and the amount of cash and deferred payments, principal and interest, which they had collected aggregated $147,488.32.

There remained unsold on March 3, 1903, of the allotted lands, 10,435.7315 acres. There yet remain unsold within the Indian addition, 413 lots and 4 tracts, containing 12.89 acres.

The proceeds arising from the sale of allotted lands have been deposited in the Treasury of the United States to the credit of the respective allottees and true owners and warrants have been drawn in favor of the allottees and true owners, or their heirs when ascertained, and delivered to them, less 10 per cent retained in the Treasury for the expenses of the sale.

The proceeds arising from the sale of Indian addition lots and tracts have been deposited in the Treasury of the United States to the credit of the Puyallup tribe of Indians, and they draw interest at the rate of 4 per cent per annum. Ten per cent of such proceeds may be used in paying pro rata the entire expenses incurred in the sale of these lands.

In 1884 when allotments were made in the field to the Indians of the Puyallup Reservation, the population appears to have been 565. The Puyallup Commissioners reported November 10, 1894, that they found upon the reservation 498 of the persons named in the allotments, 155 men, 148 women, and 195 children, and that between January 30, 1886, the date of the issuance of patents for these allotted lands, and

the date, November 10, 1894, on which they made their report, there had died 56 men, 42 women, and 108 children, making a total of 206 deaths of the Indians named in the allotments. There had been born between these dates and were living at the time of their report 119 children. The report of the superintendent of the Puyallup Indian school for the year 1904 shows the population to be 508, consisting of 239 males and 269 females.

DEATH OF CHIEF JOSEPH AT NESPELIM, WASH.

The death of Chief Joseph, of the Nez Percé tribe, which occurred last month, removes from our Indian population one of its most noted characters. His retreat with over 500 Indians, including women and children, through Idaho and Montana, closely pursued by United States soldiers under Gen. O. O. Howard, has always been acknowledged as masterly generalship. The retreat covered over 1,000 miles, and lasted from June 14 to October 5, 1877. After their surrender to General Miles, these Nez Percé, then numbering 431, were sent to Fort Leavenworth, and thence to the Indian Territory, where they remained for several years, always homesick for the mountains and valleys of Idaho. In 1883 a small party of 33 women and children were allowed to go back to their old home, and they were followed the next year by 118 others. Joseph and the remaining Nez Percé, numbering 150, were not allowed to return to Idaho, because of the murders which they had committed just before striking out on the war-path, and they were sent to Washington. There, in an excellent location, under the Colville Agency, Joseph passed twenty unreconciled years.

The report of his death is thus given by Capt. John McA. Webster, in charge of the Colville Agency:

I sincerely regret to report that Joseph, chief of the Nez Percé, is dead at Nespelim, on the Colville Reservation. His death, resulting from heart failure, occurred at 5.45 p. m., September 21, and he was buried at noon on the following day. Most of his people were absent from Nespelim at the time on their annual pilgrimage to the hop fields around North Yakima, and the regular funeral services have been deferred until their return, which Mr. McCrosson, additional farmer at Nespelim subagency, writes me will be in a few days. Many of the Indians throughout this section are making arrangements to hold commemorative services at different points, showing the esteem in which he was generally held among them.

Chief Joseph has been ailing for some time past. Some six weeks ago he drove 75 miles over very rough roads to pay his respects to me here. At that time he looked thin, ill, broken in spirit, and complained of always feeling tired.

Joseph's death will probably have little appreciable effect on the future of his people. I find that he has been regarded as a malcontent, insubordinate, and not working for the best interests of his people. His long-continued refusal to consent to the education of the Nez Percé children caused him to be looked upon as nonprogressive and a stumbling block in the path of civilization. But I formed a different impression of the man. His demeanor was subordinate, meek, and pathetic. He declared that he had been utterly misunderstood and his motives misconstrued; that last year most of the available children of his tribe attended the school here, and that he would use his utmost endeavors to send in every one that could possibly be spared this year. He also indignantly disclaimed encouraging gambling and drunkenness among his people.

WINNEBAGO HOMESTEADS IN WISCONSIN.

In the annual reports of this Office for the years 1895, 1896, 1897, and 1898 the status of the homestead entries and selections by the Winnebago Indians of Wisconsin, the laws under which they were made,

and the necessity for their investigation were set forth in detail. All of the 680 original entries and selections, and 40 entries made in 1897, have been finally disposed of except 2, and it is gratifying to be able to state that this difficult and complex matter has been so nearly disposed of. Recently this Office informally requested the General Land Office to furnish a statement as to the present status of the Winnebago homestead entries in Wisconsin. The Office was advised that all the Indian entries and selections for homesteads in that State have been finally disposed of with the exception of the following, which includes the 2 Winnebago entries above referred to:

Wausaw, Wis.—Winnebago: homestead entry No. 8782, Starwoman Dick, proof to be made; homestead entry No. 8402, Joseph Goodheart, proof to be made. Potawatomi: homestead entry No. 8164, Joe Pemmobine, suspended because of contest. Chippewa: homestead entry No. 7308, John Wildcat, proof awaiting examination.

Eau Claire, Wis.—Winnebago: homestead entry No. 8572, Beautiful Cloud, proof to be made. Chippewa: homestead entry No. 4975, Ole Thompson, suspended because of contest.

SHOSHONI RESERVATION, WYO.

Since my last report Special Allotting Agent H. G. Nickerson has been engaged in the revision of the allotments previously made on the Shoshoni Reservation by his predecessors, John W. Clark, of Georgia, and John T. Wertz, of Nebraska, and also in the making of new allotments. His predecessors made 766 allotments to the Shoshoni and 442 to the Arapaho Indians, aggregating 1,208. On June 30, 1904, there were on the reservation 1,659 Indians—800 Shoshoni and 859 Arapaho—leaving 451 Indians who had not received allotments at the time Allotting Agent Nickerson began his work, May 21, 1903.

As stated last year, the allotment work was suspended July 3, 1900, because of the alleged incompetency and unfitness of a former allotting agent, and in order that a system of irrigation might be surveyed and constructed to cover allotments already made and the allotments yet to be made. Under his instructions of November 21, 1899, George Butler, superintendent of irrigation, reported March 29, 1901, that the number of allotments under existing ditches and possible extensions of the same was about 200, covering 16,000 acres of land. These ditches were small ones, 7 in number. He surveyed and proposed the construction of the following ditches: North Fork, Coolidge, and Subagency ditches south of the Big Wind River, and the Ferry and Wind River ditches north of that river, the cost of and number of acres covered by each being as follows:

TABLE 26.—*Proposed ditches surveyed on the Shoshoni Reservation, Wyo.*

Name of ditch.	Cost.	Acres covered.	Allotted.	Vacant.
North Fork, or No. 1	$72,530	10,800	7,139	3,250
Coolidge, or No. 2	87,537	19,108	11,368	7,740
Subagency, or No. 3	33,242	7,290	3,853	3,437
Ferry, or No. 4	190,702	28,230	2,936	25,300
Wind River, or No. 5	367,000	18,900	9,468	9,400

The proposed ditches cover about 438 allotments, 100 of which are under existing small ditches. The number of allotments of 80 acres

each which can be made in the vacant lands under the proposed ditches aggregates 614. The total number of possible 80-acre allotments under proposed ditches therefore is 1,052.

The Wind River Ditch survey is a line projected to indicate the possibility of reclaiming some 125,000 acres north of Big Wind River. As this system of irrigation would be very expensive no steps have been taken to carry it into execution.

It was represented to this Office that any system of irrigation constructed upon that reservation should be confined to lands south of the Big Wind River, and that the Indians should be negotiated with for the cession of their lands north of that river, since they were willing to make such cession to the United States. Accordingly Inspector James McLaughlin was instructed March 29, 1904, to visit these Indians for that purpose, and he concluded an agreement on April 21 whereby the Indians ceded to the United States the lands within their reservation north of the midchannel of the Big Wind River, east and southeast thereof and southeast of the Little Wind River and the Popo Agie River, more particularly described as follows:

Beginning in the mid-channel of Big Wind River at a point where said stream crosses the western boundary of the reservation; thence in a southeasterly direction following the mid-channel of the Big Wind River to its junction with the Little Wind River or Big Popo Agie, near the northeast corner of township 1 south, range 4 east; thence up the mid-channel of Big Popo Agie River in a southwesterly direction to the mouth of the north fork of said Big Popo Agie River; thence up the mid-channel of the north fork of Big Popo Agie River to its intersection with the south boundary of the reservation; thence in a westerly direction to the southwest corner of the reservation; thence to the place of beginning.

This agreement has not yet been ratified by Congress.

Superintendent of irrigation, Walter B. Hill, has been instructed to survey and plan a system of irrigation south of Big Wind River sufficient to irrigate the lands already allotted there and the allotments to be made, including the extension of ditches already constructed, and to take such steps as may be necessary to secure the Indians in their water rights under the laws of the State of Wyoming. Such action was recommended to the Department October 14, 1903, and again July 7, 1904.

ENCOUNTER IN WYOMING BETWEEN SIOUX AND A SHERIFF'S POSSE.

In October, 1903, passes were issued by the United States Indian agent at the Pine Ridge Agency to two small parties of Indians, one headed by Charles Smith and the other by William Brown, both intelligent, law abiding, well disposed men. The two parties of men, women, and a few children—aggregating about thirty-five persons—left the Pine Ridge Reservation for the purpose of visiting the Black Hills and vicinity to gather berries, roots, and herbs. Both companies drifted into Wyoming, and, meeting by accident, agreed to return to the reservation together.

On the afternoon of October 30, while they were camped together on Dry Cheyenne Creek in Converse County, Wyo., Sheriff Miller, of Weston County, with a posse of seven men, visited the camp of the Indians and told Charles Smith that he had a warrant for their arrest for violation of the game laws of Wyoming, and that the Indians must go with him to Newcastle, in that State. Smith denied that

either he or any of his party had violated the law and refused to go. The sheriff then talked to William Brown, who, while likewise disclaiming any infraction of law, said that he and his party were willing to go, if Smith would. The matter was discussed in a quiet and friendly way and the sheriff's party remained and ate supper, which Mrs. Brown prepared for them. After supper the Indians broke camp and started on their way home. The sheriff and posse accompanied them to the point where the road to Newcastle branched off, and there made another effort to induce the Indians to go with them. The effort, however, was fruitless and the Indians without further parley continued on their way to the agency, while the sheriff and his party took the road to Newcastle.

The Indians traveled some 25 miles that night and went into camp. The next day, October 31, they traveled until noon, and after stopping for dinner again took the road home, and at 4 o'clock p. m., while they were traveling along Lightning Creek, in Converse County, about 25 or 30 miles north and east of Lusk, Wyo., they came to a fence built across the road. There were about 15 wagons in the train, which were strung along a distance of nearly a mile, and a boy about 11 years of age was driving the extra ponies a short distance in advance of the wagons. As they approached the fence an Indian girl ran forward and opened the gate to let the train through. The boy and ponies with two or three wagons had passed through when the Indians discovered ahead of them Sheriff Miller with a posse of 13 men, all heavily armed.

The story of just what happened at this time, and how the fight started and who fired the first shot, as told by the sheriff's party on the one hand and by the Indians on the other, is altogether different. The former state that they were stationed just outside of the fence and that as soon as the Indians saw them they began to get out of their wagons and prepare to fight, whereupon the sheriff's party moved back about 50 yards and took a position in the dry bed of the creek, where they were sheltered by a bank about 5 or 6 feet high. As the Indians came on they were called on to halt and surrender, whereupon the Indians began firing from the back part of the train, and then the fight became general. The firing lasted from three to five minutes, at the end of which time the Indians had all disappeared and most of the wagons and their other effects were scattered along the road. The sheriff was found to be mortally wounded and one of his deputies had been killed; four of the Indians were killed and two were wounded.

The Indians' story—and all of them practically give the same version of the affair—is that they were traveling along the road down Lightning Creek, most of them in their wagons, with their few guns put away under bedding and tents, and not anticipating any trouble whatever. When they came to the gate in the wire fence the girl in the lead opened it and two or three wagons had passed through, when the boy who was driving some of the ponies at the head discovered the armed party and immediately turned his ponies around and shouted as he ran back to the wagons, "Look out! white men with guns going to shoot." About that time they were fired upon by the whites, the boy and pony being killed at the first volley. There could not possibly have been more than two or three of the Indians who returned the fire of the whites, probably Black Kettle and Smith, who were in the front

wagons; and when the firing began they all tried to get away as best they could, taking wives and children with them and leaving wagons and other effects behind.

The four Indians killed were the 11-year-old boy; Black Kettle, 58 years old; Charles Smith, 38, and Clear, 52 years old. The two wounded were the wife of Charles Smith, who afterwards died, and Last Bear, an old man, who was shot through the back.

Some days later 9 of the Indians were arrested and charged with the murder of Sheriff Miller and deputy. They were tried at Douglas, Wyo., November 13, 1903, and speedily acquitted, although the 9 or 10 witnesses who testified against them all belonged to the sheriff's posse. This trial or preliminary hearing was held in a justice court, before H. R. Daniels, justice of the peace for Converse County, Wyo.

On the day following the encounter, the governor of Wyoming telegraphed this Office that a sheriff and a member of his posse had been killed by Indians of the Pine Ridge Agency, who were reported to have been illegally hunting on Lightning Creek, and asked that they be apprehended through the Indian agents or by the military authorities, and delivered to the proper authorities for trial. Later still more alarming reports were received as to the threatening attitude of the Indians, and this Office at once telegraphed the agents of the Sioux to take measures to prevent any of their Indians leaving their reservations and going to the scene of trouble. The Indian agent of the Pine Ridge Agency was at the same time telegraphed to proceed to Newcastle and thoroughly investigate the affair and bring the real facts to light. The Office also recommended that the Attorney-General direct the district attorney to make an investigation, and that an inspector of the Interior Department be sent out to cooperate with him.

Mr. T. F. Burk, United States district attorney, and Special Indian Agent Charles S. McNichols, were assigned to the duty of making the examination, and from their reports the following is clear: The Indians were lawfully absent from their reservation; it does not appear that they were guilty of a direct violation of the game laws, though the evidence shows that they had bought fresh skins and could be prosecuted for having the same in their possession; the warrant issued for their arrest charging a violation of the game laws was for but two persons, whereas the sheriff attempted to use it for the arrest of some 20 or 25 Indian men, besides women and children; at the time of the shooting the Indians were not in a threatening or menacing attitude, whereas the sheriff and his posse were the aggressors; and under the conditions the Indians were legally justified in resisting arrest, but not to the extent of using deadly weapons, unless the sheriff's posse first used their guns, which seems to have been the case. In the opinion of this Office the trouble was brought on primarily by hasty and imprudent conduct on the part of the sheriff and posse, and might easily have been avoided had they used more discretion and judgment.

The full reports of the special agent and the district attorney, dated, respectively, November 13 and December 16, including all of the testimony taken in the case, have been printed in Senate Document No. 128, Fifty-eighth Congress, second session.

Very respectfully, your obedient servant,

W. A. JONES,
Commissioner.

The SECRETARY OF THE INTERIOR.

REPORT

OF THE

SECRETARY OF AGRICULTURE.

To the President:

I have the honor to submit herewith my Eighth Annual Report as Secretary of Agriculture.

INTRODUCTORY.

Since my last report progress has been made in securing cooperation with the experiment stations of the several States and Territories; some of the Bureaus of the Department make research in conjunction with all the stations. Preliminary steps have been taken to conduct feeding and breeding experiments in several States looking to the development of breeds of animals suitable to our conditions of climate and soils, and capable of meeting the demands of commerce at home and abroad.

Emergencies arising through the invasion of the cotton-growing States by the boll weevil, a Central American insect that has done much damage in Texas and threatens the entire cotton-growing section of our country, have been met by vigorous work that promises to enable the planters to grow crops in defiance of the pest. The spread over several of the mountain States of a cattle mange required vigorous intervention by the Department. It was necessary to detail a large force of experts to supervise the dipping of the herds in order to eradicate the parasite. Cooperation with most of the States has been arranged, and the rest promise to secure State legislation to compel all flock and herd masters to clean their stock.

The demand in the States for experts to supervise the building of roads suggests the education of engineers in the road laboratory for that work.

The efforts of the Department to create a hardy orange tree that would produce a sweet orange have at last been successful. A hybrid of the Florida orange and Japanese trifoliata has fruited and given us

the desired result. Another hybrid gives us an orange very similar to the grape fruit, and a third gives us a fruit equal to the lemon for all practical purposes. Other fruits of these hybrids will be valuable for marmalades and cooking.

Valuable research has been made in fruit shipping to foreign countries; the value of promptly placing fruit in low temperatures as soon as it is taken from the tree is demonstrated.

The value of nitrogen-fixing bacteria has been thoroughly proved, greatly increasing yields of leguminous plants and the accompanying production of nitrogen in the soil.

Progress is being made in introducing plants that succeed in light rainfall localities.

Importers of foods and drinks are obeying the law with regard to adulterations and false labeling.

The elements of agricultural science are gradually finding their place in the primary and secondary schools, through the instruction of teachers.

We buy over $200,000,000 worth of products from tropical countries that can not be grown in continental United States. Through scientists sent from the United States to the several island groups the Department is instructing the people of our island possessions to grow these things, such as coffee, rubber, fibers, drug plants, nuts, fruits, spices, and the like.

Our farmers buy $100,000,000 worth of machinery every year. A better knowledge of its use and care is necessary. Several agricultural colleges are taking up this inquiry, and giving instruction in regard to machinery and farm buildings.

AGRICULTURE AS A SOURCE OF NATIONAL WEALTH.

Favored with continued prosperity in 1904, the farming element of the people has laid broader, deeper, and more substantial the foundations of a magnificent agriculture. These happy results have augmented the similar ones of 1903, so that a period of some industrial depression during the last two years has been saved by the farmers from the severer conditions that must otherwise have befallen in consequence of the absorption of a large portion of the readily convertible capital of the nonagricultural classes into great and prevalent speculations. Thus it has happened the farms of the nation have been that sustaining power upon which a basic dependence must be placed in all stresses by a people endeavoring to maintain economic self-sufficiency.

WEALTH PRODUCED BY FARMERS.

As great as the financial successes of agriculture were in 1903, hitherto without equal, those of 1904 advanced somewhat beyond them. While some products have fallen behind in value others have more

than filled the deficit, and the general result is that the farmers have produced in value much more wealth than they ever did before in one year.

One conspicuous item that has contributed to this is the corn crop. With a quantity closely approaching 2½ billions of bushels, near the record crop of 1902, the high price of this year gives this crop a farm value much greater than it ever had before, far exceeding a billion dollars. With this crop the farmers could pay the National debt and the interest thereon for one year, and still have enough left to pay the expenses of the National Government for a large fraction of a year. The cotton crop, including seed, became the second one in value in 1903, and remains so in 1904. It is now too early to state even with approximate accuracy what the farm value of this crop is, but indications are that the farm value of lint and seed must reach $600,000,000. In this case, as in the case of all other statements herein made concerning crop values for 1904, it must be borne in mind that the amounts have not been finally determined by the Department, that the figures may be considerably changed when the annual estimate is made in the usual way, and that the values are at the farm, and are not commercial values at the exchange or anywhere else.

Hay and wheat are contending for the third place in point of value, although for many years one or the other has held second place or been next to corn. It is expected that these crops, hay and wheat, will together be worth on the farm this year nearly as much as the corn crop, or appreciably more than one billion dollars. Although the wheat crop has a considerably lower production than in any year since 1900, the farm value per bushel is higher than at any time since 1881, so that this is undoubtedly, by a considerable margin, the most valuable crop of wheat ever raised in this country.

It now seems probable that potatoes and barley reached their highest production in 1904; that the oat crop was never so large by 60,000,000 bushels, except in 1902; and that more rice was produced than in any previous year by toward 300,000,000 pounds, so that the present crop of rice has a commercial estimate of 900,000,000 pounds.

The principal crops that are valued annually by the Department or by commercial houses have an aggregate farm value this year which at the date of this writing apparently amounts to $3,583,339,609. The same crops in 1903, as finally estimated, had a farm value of $3,156,099,392 and had a census value for 1899 of $2,526,345,478. In these principal crops, therefore, the farmers find an increase in value for 1904 of 14 per cent over 1903 and of 42 per cent over the census year five years ago.

On account of the difficulty of estimating the present number and value of farm live stock, it must be sufficient to compare the farm equipment in this respect at the beginning of this calendar year as

determined by this Department with similar statements made for 1903. Farm horses have increased slightly in number and more in value, and in the aggregate they never were so valuable as in 1904, with a total of $1,136,940,298. The value of farm mules also reached its highest point in 1904, $217,532,832. Cattle have declined a little in number and more in value, and the same is true with regard to sheep and hogs; but the steady advance of poultry in number and in the quantity and value of products leads to some astonishing values for 1904 when the census ratios of increase from 1890 to 1900 are extended to the present year. The farmers' hens are now producing 1⅔ billions of dozens of eggs yearly, and these hens during their busy season lay enough eggs in two weeks, at the high prices of eggs that have prevailed during the year, to pay the year's interest on the National debt.

UNTHINKABLE AGGREGATES.

After a laborious and careful estimate of the value of the products of the farm during 1904, made within the census scope, it is safe to place this amount at $4,900,000,000, after excluding the value of farm crops fed to live stock in order to avoid duplication of values. A similar estimate made for 1903 gives $4,480,000,000, and the census total for 1899 is $3,742,000,000. It is by no means to be admitted that these figures represent fully the value of the wealth produced on farms. Within the limits of ascertainable values, the farms of 1904 produced an aggregate wealth with a farm valuation that was 9.65 per cent above the product of 1903, and 31.28 per cent above the figures for the census year 1899.

An occupation that has produced such an unthinkable value as one aggregating nearly $5,000,000,000 within a year may be better measured by some comparisons. All of the gold mines of the entire world have not produced since Columbus discovered America a greater value of gold than the farmers of this country have produced in wealth in two years; this year's product is over six times the amount of the capital stock of all national banks; it comes within three-fourths of a billion dollars of equaling the value of the manufactures of 1900, less the cost of materials used; it is twice the sum of our exports and imports for a year; it is two and a half times the gross earnings from the operations of the railways; it is three and a half times the value of all minerals produced in this country, including coal, iron ore, gold, silver, and quarried stone.

FOREIGN TRADE.

In the exportation of their surplus during the year ending June 30, 1904, the farmers of the country kept well up to the high level of recent years. The average annual value of the exports of farm products during the five years 1899–1903 was $864,930,137, and the value

for 1904 was but little below, or $859,170,582. The year 1904 was exceeded by only two years, 1903 and 1901, in the value of exported farm products.

On the other hand, the imports of farm products for the fiscal year 1904 were higher in value than ever before, this value being $462,384,570, leaving an apparent balance of trade in farm products in favor of this country of $396,786,012, or the lowest balance in these products since 1897. The balance declined $25,495,220 in 1904. This is accounted for on the side of imports mostly by increases in the imports of coffee, wool, tea, cocoa, and chocolate; and on the side of exports it is accounted for principally by a decrease of over $72,000,000 in the value of exported grain and grain products which was not balanced by an increase of about $55,000,000 in the value of exported cotton.

During the last fifteen years the apparent balance of trade in favor of this country, all articles considered, was $4,384,574,143. This was owing entirely to the balance of trade in farm products, which during the same time amounted to $5,202,551,016, and was large enough to leave the above-mentioned balance of trade after sustaining adverse balances in products other than those of the farm, amounting to $817,976,963.

INCREASE OF FARM CAPITAL.

The subject of the achievements and financial condition of the farming population may be pursued farther. While the farmers have been increasing their annual product of wealth since 1899 from great proportions to still greater ones, the value of their farm property has gone on increasing. Ratios of increase from the last three censuses indicate that since 1900 the farm land with improvements, including buildings, have increased in value 1⅞ billions of dollars; the implements and machinery, over $100,000,000; the principal classes of live stock (corrected by the Department's information), $240,000,000. Hence the apparent total of the increase in the value of farms and farm property within four years amounts to about $2,000,000,000, a total that seems to be under the fact, since it does not recognize the marked increase in cotton, corn, wheat, and other lands with high crop values during the last two years. The cotton crop brought to planters not merely an increased price per pound, but it at once made cotton lands more valuable to the extent of several dollars per acre, according to numerous reports received by the Department.

EVIDENCE OF THE BANKS.

The improved financial condition of the farmer is indicated expressively by deposits in banks in several States in which there is so little manufacturing and mining that the conditions are chiefly created by

agriculture. The three agricultural States—Iowa, Kansas, and Mississippi—may be selected for a comparison with the United States as a whole. Individual deposits in the National banks of Iowa increased from June 30, 1896, to October 31, 1904, 137 per cent; Kansas, 212 per cent; Mississippi, 286 per cent; the United States, 92 per cent, or much below the increases of the States named. In the State and private banks deposits during this time increased 128 per cent in Iowa, 227 per cent in Kansas, 306 per cent in Mississippi, and 185 per cent in the United States. In the savings banks of Iowa the increase in deposits was 215 per cent, as compared with 53 per cent for the United States. All kinds of banks being combined, the deposits increased 164 per cent in Iowa, 219 per cent in Kansas, 301 per cent in Mississippi, and 91 per cent in the United States.

A similar comparison favorable to the agricultural States may be made with regard to the number of depositors. In the savings banks of Iowa the number of depositors increased 209 per cent from 1896 to 1904, and in the United States 36 per cent. For National banks, comparison may be made between highly industrial and agricultural States as follows: The number of depositors increased from 1889 to 1903 by 145 per cent in Massachusetts, 117 per cent in New York, 258 per cent in Kansas, and 263 per cent in Mississippi. The increase in Iowa was 184 per cent, the low figure being accounted for by the large development of savings banking.

The Comptroller of the Currency has ascertained the average amount of the daily deposits in National banks, and from his statement it appears that the average daily deposits in October in the National banks of Kansas increased 625 per cent from 1889 to 1903, in Iowa 105 per cent, in Mississippi 89 per cent, in Massachusetts 106 per cent, and in New York 207 per cent.

The farmers' rate of financial progress, as evidenced by the foregoing statements, need fear no comparison with that of any other class of producers. The farmer may not become a millionaire, but he is surer than the millionaire to retain his wealth and to have independence in living.

GENERAL DIFFUSION OF WELL-BEING.

The diffusion of well-being among farmers throughout all parts of the country is one of the most conspicuous features of the recent agricultural development. This attracted attention a year ago and is now even more noticeable; because the great South is more especially enjoying this growth of well-being, owing to the enhanced value of the cotton crop in addition to the general progress in agriculture. The Eastern farmer, who was long on the verge of bankruptcy in competition with the virgin soil and rapid expansion of the northern half of the Mississippi River Valley, has survived that competition and now enjoys more normal conditions, owing

to the creation and maintenance of many large near-by markets by many varied industries. The Pacific Coast has long been prosperous with its world-famed specialties; the mountain States are glad with the fruits and promises of irrigation; in the older prairie States the farmer has seen his land go from $1.25 an acre, or from a homestead gift, to $100 and $150; and the "Great American Desert," as it was called when it was nothing but a buffalo range, is now peopled by a progressive race of farmers, whose banks are filled to overflowing with the proceeds of their products.

WEATHER BUREAU.

OBSERVATORY BUILDINGS.

Carrying out the policy of the Department, the Weather Bureau has continued to cooperate with the leading universities throughout the country, and at the present time the relations existing are more intimate and the work done more important than at any time in the history of the service. Several universities and colleges have donated ground for the erection of buildings. Appreciation of the value of the work being done by the Weather Bureau has also been demonstrated by several universities in placing at the disposal of the Bureau, without cost, office quarters in their buildings for recently established stations. The erection of buildings by the Weather Bureau saves the amount previously paid for rent of office quarters.

FORECASTS.

Weather forecasts for thirty-six and forty-eight hours in advance have been made daily throughout the year for each State and Territory, and special warnings of gales on the seacoasts, Gulf, and Great Lakes, and of cold waves, frost, heavy snows, floods, etc., have been issued when the advices would benefit commercial, agricultural, and business interests. The North Atlantic and West Indian storm-warning service was continued, and forecasts for the first three days out of steamers bound for European ports were issued daily at 8 a. m. and 8 p. m. In a number of instances European shipping interests were notified of the character and probable course of severe storms that were passing eastward from the American coast. Daily warnings and advices issued in connection with the injurious weather conditions of the year resulted in saving much property.

RIVER AND FLOOD SERVICE.

The floods of the year did not approach in character and importance the overflows of the spring of the year immediately preceding, when over 100 human lives were lost, besides property valued at

over $40,000,000. There were, nevertheless, severe floods at various times, and in the management of the work occasioned by them the river and flood service continued to demonstrate its usefulness and growing efficiency as a valuable branch of the Weather Bureau. That there has been constant progress in the accuracy of its work is evidenced by the more specific and detailed character of the forecasts and warnings in localities where such exact work had heretofore been considered practically impossible. The service performed during the prevalence of the great winter ice gorges in the Susquehanna, Allegheny, and Ohio rivers, with their attendant floods, was especially noteworthy. These gorges were the greatest in the history of the localities, and that their great dangers were minimized is due in no small degree to the timely advices and warnings of the Weather Bureau.

There were minor floods during nearly every month of the year, but each was amply covered by timely warnings. These floods were not in any sense alarming or dangerous, but they nevertheless attained sufficient importance to endanger a large amount of property.

CLIMATE AND CROP SERVICE.

The National weather and crop monthly and weekly bulletins and the annual summaries and monthly and weekly bulletins issued from the 43 section centers, also snow and ice bulletins, daily bulletins issued in connection with the corn, wheat, cotton, sugar, rice, and fruit services during the growing season, and the special snow bulletins issued during the winter by the sections in the Rocky Mountain and Plateau regions have appeared regularly during the year and have been of great value in affording timely information.

DISTRIBUTION OF FORECASTS AND SPECIAL WARNINGS.

The extensive distribution of daily forecasts by means of forecast cards has continued, and the railway, telegraph, and train services have supplied in the aggregate over 5,000 railroad stations with bulletins generally posted in the waiting rooms for the benefit of employees and the traveling public. The number of addresses on the rural free-delivery list has been greatly decreased as compared with that of the previous year, owing principally to the discontinuance of the afternoon forecast at some of the centers and the transfer of a large portion of this work to the free telephone service. The rural telephone lines are now the best and most economical means of distributing weather information. The forecasts are quickly disseminated, covering a large territory with little or no expense to the Government. By arrangements made with two of the great trunk telephone lines of Ohio the daily morning forecasts are now available for the use of more than 100,000 subscribers in that State, and the records indicate

that nearly one-half of that number have taken advantage of the opportunity to get the forecasts in their homes within a few minutes after their preparation at the district center.

MOUNT WEATHER METEOROLOGICAL RESEARCH OBSERVATORY.

During the past year the main building of the Mount Weather Observatory has been completed, while the power plant, the building from which balloon ascensions and kite flights are to be made, and the magnetic building are being constructed. The physical laboratory for electrical and radioactive effects is being planned, the erection of which will take place in another year. Finally, a comprehensive physical observatory for photographing the sun directly and through the spectrum, for measuring radiation energy by actinometry and bolometry, with their allied equipment, will be required. This complex institution must grow up slowly as plans can be matured along the best modern lines. When the equipment is ready we shall make and send out apparatus for the exploring of the atmosphere to altitudes of from 3 to 10 miles. It is probable that many balloons will be simultaneously liberated from different stations so as to get records of storms and cold waves from their four quadrants. With observations from the magnetic, the electric, and the solar physics observatories, opportunity for study will be given to those who believe that the cyclonic and anticyclonic whirls that constitute storms and cold waves are mainly the result of changes in the amount or intensity of some form of solar radiation. It is the purpose to make the research at Mount Weather catholic in its broadness.

WIRELESS TELEGRAPHY.

The Department of Agriculture, through the Weather Bureau, was one of the first of the Executive Departments to take up, systematically, experimentation in problems concerned with the development of wireless telegraphy. By this action research into the physical problems concerned in transmitting messages through the medium of ether waves was greatly stimulated in this country. Probably one of the best, if not the best, instruments anywhere made for the receiving of wireless messages had its inception in the experimental work of the Weather Bureau. Recently a board was appointed by you to consider the whole problem of wireless telegraphy and the relation of the Government thereto. Its recommendations, which you approved, will result in the discontinuance of experiments along this line by the Weather Bureau, their transfer to the Navy Department, and the transfer to the Weather Bureau of all the meteorological work now being done by the Navy Department.

LONG-RANGE FORECASTS.

It is hoped the time will come when it will be possible to forecast the weather for coming seasons, to specify in what respect the coming month or season will conform to or depart from the weather that is common to the month or season; but that time has not yet arrived, and the officials of the Weather Bureau have been informed that they will best serve the public interests when they teach the communities they serve the true limitations of weather forecasting.

EDUCATION IN METEOROLOGY.

The Department is interested in the general introduction of meteorology into the courses of study provided by the universities and higher technical institutions of the country. The mode of teaching and the results obtained were made an important part of the work of the Convention of Weather Bureau Officials which was held at Peoria, Ill., in September, 1904. At an increasing number of educational institutions Weather Bureau officials, in addition to their regular duties and mainly outside of office hours, deliver courses of lectures on meteorology.

TELEGRAPH SERVICE.

To meet as far as possible the pressing demands for a wider distribution of the daily telegraphic reports of observations, arrangements were perfected during the year for a very generous increase in the number of such reports telegraphed over circuits and as special messages, and while for economical reasons it is impossible to satisfy all demands in this respect, it is believed that the present distribution of reports will result in a much more comprehensive display of weather conditions on the maps and bulletins and will give general satisfaction both to the public and to our officials charged with making district and local forecasts. Submarine cables have been laid from Block Island, Rhode Island, to the mainland; from South Manitou to North Manitou Island, Michigan; from Flavel, Oreg., across the mouth of the Columbia River to Fort Canby, Wash.; and preparations are being made for laying one from North Nags Head to Manteo, Roanoke Island, North Carolina.

The reorganization at the beginning of the year of the vessel and wreck reporting service of the Weather Bureau, with additional stations at Sand Key, Florida, and Southeast Farallone, California, has largely added to the effectiveness of this popular feature of the Bureau, and is much appreciated by maritime interests generally. Vessel and wreck reports are now furnished free of charge, except for telegraph tolls over commercial lines, to all corporations and individuals who

may apply for them. Besides reporting passing vessels, an important service is rendered by these stations in connection with maritime disasters.

INSTRUMENTAL EQUIPMENT.

The Bureau has now 158 stations completely equipped with instruments by means of which an automatic record is made of the direction and velocity of the wind, the duration of sunshine, the amount and time of beginning and ending of rainfall, and the temperature and pressure of the air. With one or two exceptions the stations that are not at present so equipped are of slight importance, or in general have all the instruments necessary for the satisfactory performance of their work. One hundred and fifty-nine steel towers, with the improved auxiliary equipment for the display of storm warnings, are now installed at as many stations distributed over the shores of the Great Lakes and the Atlantic and Pacific seacoasts. At 77 of these stations high-power electric lanterns are used, and at the others improved oil lights.

BUREAU OF ANIMAL INDUSTRY.

Our animal industry is shown only in small part by the figures giving the exports, yet these exports are so large as to be worthy of notice. The animals exported in the fiscal year 1904 were valued at about $48,000,000, which was an increase over the previous year of $13,000,000; the exports of meat and meat products, including oleo oil, oleomargarin, and lard compounds, amounted to more than $174,000,000, a decrease of $4,000,000 from the year before. We also sent abroad nearly $6,000,000 worth of dairy products, and of other animal products, such as hides and skins, glue, grease, and grease scrap, over $5,000,000 worth. The exact total of the above items of export, as given in preliminary returns, was $223,023,060, which was an increase over the previous year of more than $12,000,000. The Department is fostering this foreign trade, as well as safeguarding the live-stock industry within our own country.

INSPECTION OF ANIMALS FOR EXPORT.

The inspections of live stock for export included Canadian animals that pass through territory of the United States; these numbered about 26,000 cattle and 60,000 sheep. The total inspections for export, including these Canadian animals, were 790,496 for cattle, 534,850 for sheep, and 3,293 for horses. As compared with similar figures for the fiscal year 1903, this statement shows an increase of 43.7 per cent in the number of American cattle exported and an increase of 116.5 per cent in the number of American sheep exported. The number of horses exported, however, was reduced by one-third.

The percentage of loss in transit for the 360,990 head of American cattle landed at the ports of London, Liverpool, and Glasgow was but 0.17; the percentage of loss for the 212,299 American sheep landed at the same ports was 0.94.

The number of clearances of vessels engaged in carrying live stock was 774, and the certificates of inspection issued for American cattle exported to Europe numbered 1,419.

INSPECTION OF IMPORT ANIMALS.

The work of the inspection of import animals calls for the utmost vigilance in order to prevent the introduction of diseases which might prove disastrous to the live stock of this country. Most of the animals that came through the seacoast ports of entry were imported for breeding purposes, but a considerable number of cattle were admitted from Mexico for feeding. The importations of pure-bred animals subject to quarantine were very light during the year, the number at New York, the chief port of entry, having been 266 cattle, 128 sheep, and 123 hogs. The number of farm animals that came through seacoast ports and not subject to quarantine was 2,492; of this total 2,425 were horses. We brought from Great Britain 1,523 horses, from Germany 204, from Belgium 651, and 47 from other countries.

The importations of animals from Mexico were 12,088 cattle, 701 sheep, 314 horses, and various other animals to the number of 203.

An unusually large number of ruminants for menageries, all of which were subject to inspection and quarantine, were imported during the year.

INSPECTION OF MEAT.

The inspection of animals and animal products was maintained at 51 establishments and cities. The total number of ante-mortem inspections was about 65,000,000, whereas in 1903 the number was about 59,000,000; this shows an increase of 6,000,000 animals. The post-mortem inspections amounted to nearly 40,000,000, which was an increase, except as to sheep, over the year 1903. The increase in 1904 in the number of hogs inspected post-mortem was over 2,000,000.

The meat-inspection tag or label was affixed to 22,943,067 quarters and 120,404 pieces of beef, 8,230,528 carcasses of sheep, 765,301 carcasses of calves, 1,122,193 carcasses of hogs, and 726,779 sacks of pork. Besides, the meat-inspection stamp was affixed to 23,000,000 packages of meat and meat products that had received the regular post-mortem inspection.

Compared with the figures of 1903, the statement for 1904 shows an increase in beef exports of 47,138,044 pounds, a decrease in mutton exports of 2,016,924 pounds, and an increase of pork exports of 21,319,830 pounds—a net increase of 66,440,950 pounds for all.

In the matter of the microscopic inspection of pork there was a great decrease, from 19,000,000 pounds in 1893 to 9,000,000 in 1904. This inspection is restricted to the pork that is destined for those countries which require such safeguard. The number of carcasses thus inspected in 1904 was 315,045. The number of carcasses found to be trichinous was 2,643.

The cost of the ordinary inspection was $781,590.95, and the microscopic inspection cost $53,934.01. Each hog carcass cost 17.1 cents for its inspection and each pound of pork exported 0.6 cent.

CATTLE SCAB, OR MANGE.

The existence of scab, or mange, in cattle has for several years past often been brought to the attention of the Department. As early as the spring of 1901 inspectors in the field recognized that scab of cattle was a contagious disease, and asked for instructions regarding it. The disease continued to spread, and during that year numerous inquiries were received as to how the disease could be cured and controlled. It became generally known that the dipping of cattle was the best method of treatment, and the Department received many calls for information as to the construction of vats and the best dips to use. In January, 1902, a bulletin describing scab of cattle and its treatment was issued. There was a large individual demand for this publication and it was supplied to many State authorities for general distribution.

SPREAD OF THE DISEASE.

In spite of efforts to disseminate all the information possible on the subject, the disease spread to an alarming extent, especially on the Western ranges, where the cattle roamed over large areas, and where a few infected animals introduced would communicate the disease to others until the whole band was affected. So extensive was the distribution of the scab that in June, 1903, the Department issued regulations for controlling it, stating that the disease existed among cattle in that part of the United States lying west of the Mississippi River, including the State of Minnesota. These regulations did not apply to the Eastern part of the United States. At that time all of the available funds were used for the employment of inspectors in the Western country in the eradication of scabies among sheep, and there were but a few men who could be used for enforcing the regulations for preventing the spread of scabies among cattle. Many of the Western States, notably Colorado, began during this year to take measures for suppressing the malady within their limits. These States, however, were unable to prevent the disease from being introduced from other States, consequently very urgent appeals were made from State authorities asking that supervision by this Department be extended to cattle scab.

WORK OF NATIONAL GOVERNMENT.

It was apparent that, unless the Federal authorities undertook measures for its control, the States would suffer disaster, not only from the loss of stock affected, but from the embargo which would be placed upon cattle passing from an infected State to one where the disease did not exist. The disease became so prevalent that it was carried from the ranges to the feed lots in States of the Middle West, and there was danger of injury to the trade in live cattle for export to Great Britain. When the scab became so common on the ranges, it was found that unless the cattle were dipped before shipment the cars in which they were loaded became infected; also the stock pens, where the cattle were unloaded for food and rest en route, as well as the stock yards at the leading markets. It became imperative, therefore, that a campaign should be entered upon, and accordingly in March, 1904, regulations were issued applying to all of the United States and prohibiting shipment of cattle affected with this disease from one State to another.

Provision was made in these regulations for allowing shipment after cattle were dipped, and, though affected with the disease, they could be shipped for immediate slaughter after one dipping; but if cattle were intended for feeding or stocking purposes, they must be held for the second dipping, ten or twelve days after the first one. To secure the enforcement of these regulations, it was necessary to station a large number of inspectors in the Western States, particularly the range States where shipments of cattle originated and where the disease was most prevalent. So far as possible the force of inspectors already in this region was used; but this was entirely inadequate to the demands and required an extensive increase, so that at the present time more than two hundred men are in the field engaged in the inspection of sheep and cattle for scabies.

There was an urgent call for inspectors, mostly from persons who had cattle to ship and those who owned affected cattle which required dipping. This dipping in several States was done in cooperation with the State authorities and under the supervision of Federal employees. Shipments of cattle from ranges known to be infected could not be made to market centers without a certificate showing freedom from scabies, or to the effect that the cattle had been dipped and could be transported without spreading the contagion.

During the first nine months of this year, in the 34 States and Territories where this inspection was maintained, 3,843,075 cattle were inspected for scab; 168,203 were found affected with the disease, and 300,275 were found to have been exposed to it. The total number of cattle dipped during this period, under official supervision, was

420,762; 116,362 affected cattle were given one dipping, and 76,974 affected cattle were dipped a second time, after an interval of ten or twelve days. This work necessarily increases the expenses of the Bureau, which, for the month of January, 1904, amounted to $404.65 for this inspection exclusively, and in September, 1904, to $11,770.70.

FOOT ROT AND GID OF SHEEP, AND RABIES.

Besides the several lines of work which have been carried on through a series of years and which have been reported upon from time to time, special work has been done with reference to foot rot of sheep and the disease of sheep commonly known as "gid." In a recent shipment of sheep which arrived at the Buffalo stock yards 75 per cent were found to be affected with foot rot. This disease is not at all uncommon in the sheep-raising parts of the country, and its eradication is not a very difficult undertaking. A bulletin is now in press which deals with all of the phases of foot rot, and should enable the sheep raiser to clean up his flock without much difficulty or great expense.

Although the conditions prevailing in this country are considered unfavorable to the parasite causing gid, the disease, nevertheless, has gained a foothold in the Rocky Mountain States, and it is therefore well to understand the life history of the parasite causing the disease and the methods of dealing with it. It is reported that a few years ago the loss of sheep from gid in France was as great as 1,000,000 annually. This subject has received a thorough investigation, the results of which will soon be published.

Investigations regarding the presence of rabies, or hydrophobia, in the vicinity of Washington, D. C., were continued during the year. Of the 38 suspected cases examined positive results were obtained from 22, of which number 13 were from the District of Columbia.

TUBERCULOSIS.

The work on the subject of tuberculosis has been conducted throughout the year along lines which have been planned for several years. Some experiments which have been recently reported upon by this Bureau go to show conclusively, it is believed, that it is an error to conclude that cattle can not be infected with human tuberculosis. These experiments not only justify but show the desirability of a rigid enforcement of public regulations looking to the control and the eradication of tuberculosis in cattle.

The demand for tuberculin greatly increased during the year. The amount distributed in 1904 was 74,000 doses, while in 1903 the number of doses was 47,000.

DISTRIBUTION OF BLACKLEG VACCINE AND MALLEIN.

The blackleg vaccine for cattle which is manufactured and distributed by the Bureau of Animal Industry continues to give satisfactory results. During the year the number of doses that were sent out fell off somewhat from the report of the previous year, but the number of persons supplied was slightly increased. It is interesting to note that, in 1904, 1,000,000 doses of the vaccine were used and reported upon by over 10,000 persons with highly satisfactory results. After a careful analysis of the figures which were compiled from the reports from the users of blackleg vaccine, and eliminating the deaths which could in no manner be properly charged against the action of the vaccine, the number of cases that died after vaccination is reduced to the very low figure of 0.44 per cent.

The manufacture and distribution of mallein in 1904 for glanders in horses was about the same as in the previous year, and the number of doses sent out was 7,000.

INSPECTION OF DAIRY PRODUCTS.

Under the act of Congress approved May 9, 1902, the Bureau of Animal Industry is charged with the inspection of certain dairy products which are designed for interstate commerce, especially the article of renovated butter. This work is now fully organized and is governed by joint agreement of the Treasury Department and the Department of Agriculture. The reports for 1904 show that there were 73 factories licensed and bonded, which was a reduction of 9 from the previous year. These factories were located in 14 States and the District of Columbia. The quantity of renovated butter made at bonded factories during the fiscal year of 1904 was about 54,000,000 pounds. The average quality of renovated butter is improving. The difference in general character, since the inspection was inaugurated, is very marked. This is due, in part, to improved machinery and processes, and largely to the better average quality and condition of the "packing stock" or raw material used.

Such stock is now closely collected in the producing districts, so that accumulations of country butter at remote points and involving deterioration are not frequent. More care is taken in sorting, packing, and storing the stock. Occasionally a lot of packing stock is found in such a condition of filth or putrefaction as to necessitate condemnation. In still rarer cases the manufactured product is found to be so bad, because of bad materials, ignorance, or negligence in renovating, or as the effect of age, as to make it unfit for food. In a few such instances the sanitary inspection required by law and made by this Department has caused the objectionable materials and products

to be removed from the food market and sold as grease. But, as stated, such instances are not frequent. Although there is still opportunity for great improvement in materials, in the manner of handling and transporting the same, in factory management, and in the finished product, it is true that the manufacturers are endeavoring, as a rule, to improve conditions at all points and are ambitious to win a reputation for producing an article of high quality.

BUREAU OF PLANT INDUSTRY.

In no field of industrial work have there been greater advances during the past decade than in the improvement of plants and the methods of growing them. The Bureau of Plant Industry has done much to bring about these advances. Diseases have been studied and remedies found, new varieties of plants have been created and new industries established, and the world has been searched for better things, all for the purpose of helping the farmer and making his work less burdensome and more profitable.

GROWTH OF THE WORK.

Since the Bureau of Plant Industry was organized, three years ago, the demand for more work has been so great as to require an increase of nearly 50 per cent in men and funds to conduct it. There are now in the Bureau about 500 workers, 60 per cent of whom are engaged in scientific investigation and its application to the farm, the orchard, and the garden. The Bureau is endeavoring to train young men as rapidly as possible for this work. The agricultural colleges furnish a part of these men, but the demand for those with proper qualifications is still greater than the supply.

ENCOURAGING INTEREST IN FARM LIFE.

The Department is not an educational institution in the strict sense of the word, but it can do and is doing much to bring home to the people in all walks of life the importance and value of the farm and its productions. The Bureau of Plant Industry is making a special effort to encourage the study of plants in the public schools. The future welfare of this country depends upon its agricultural development, and it is important and vital that a knowledge of the opportunities in this field should early be brought to the attention of the child. Unfortunately, our system of elementary education is such as to leave no impression on the child's mind of the importance, value, and usefulness of farm life. The child is, in many ways, brought early into contact with facts which point to him the value of commercial life. He is, therefore, early inoculated with the belief that to

reach the highest possibilities he must, if he is on the farm, migrate to the city. It is to be regretted that farm life in the past has not always been conducive to the encouragement of young men to remain on the farm.

Very little effort has been made to overcome the general belief that there is always a great amount of drudgery connected with the farm, and that the opportunities in this sort of occupation are narrow and limited. When we see the rapid advances that are being made in agriculture along all lines and note the need for bright young men in this field, the opportunities offered by the cultivation of the soil seem as great as in any other field. In order to bring these matters clearly home to the children, efforts are being made by the Department to encourage the growing of plants in connection with the public school work. The general distribution of seed is being handled in such a way that the encouragement of plant growing will be a feature of it. Wherever it has been practicable to influence school authorities, this has been done. Various members of the staff of the Bureau are constantly endeavoring by publication of papers, lecturing, etc., to point out the advantages of rural life.

DEVELOPING NEW INDUSTRIES.

RICE PRODUCTION.

The Bureau of Plant Industry has continued its efforts to encourage rice production in the Southern States, especially in Louisiana and Texas. A special farm for the growing of rice has been placed at the disposal of the Department, and upon this farm various questions relating to the industry are being worked out. New varieties of rice are being tested, questions pertaining to the best methods of improving the seed are being settled, and other important problems are under investigation. There has been an enormous increase in the production of rice in the States of Louisiana and Texas during the past three years. As the industry has developed, the necessity has become more and more evident for paying special attention to the improvement of cultural methods.

In the early days of the industry the crop was so profitable that little attempt was made to obtain information on important matters, such as the necessity for rotation, the best methods of handling the water, means of controlling diseases and weed pests, and other important subjects. As competition has become greater and the production larger, farmers are realizing the necessity for paying strict attention to all details connected with the work. Preliminary estimates show that during the year 1904 the area devoted to rice in Louisiana and Texas was 600,000 acres, and the crop will approximate 650,000,000 pounds of rough rice.

DURUM WHEATS.

The success attending the introduction and growing of the durum or macaroni wheats continues unabated. The past season has been a particularly trying one for all wheats in the Northwest. Rust has caused great damage in many localities, but the durum wheats have been in most cases resistant. Probably no less than 14 million bushels of these wheats will be grown the present season, and the evidence at hand indicates that great quantities of the wheats are being saved for seed for next year's planting. Owing to the almost total loss of other wheats east of the area where the durum wheats succeed best, efforts will probably be made next year to plant the durum wheats farther east than they should be planted. It must be remembered that these wheats are specially adapted to semiarid regions, and moving them into humid regions may result in disappointment.

It is gratifying to announce that the durum wheats are now being handled without difficulty by many of the millers, and regular grades corresponding with the grades of other wheats have been established in the markets. From the outlook at present there will be not less than 40 or 50 million bushels of these wheats produced next year. The fact that these wheats are valuable for bread and that they can be grown successfully where most other crops fail is an exceedingly important thing for the agricultural development of the great semiarid West.

THE MATTING INDUSTRY.

The United States imports large quantities of mattings from the Orient. These mattings, for the most part, are made of a species of rush which might easily be grown in this country; in fact, there are already here several native forms which undoubtedly would prove valuable for the manufacture of fine mattings. Special American machinery has been devised and is now in use in the manufacture of a very high grade of mattings. So far, the raw material used by these machines has been imported. During the year the Bureau of Plant Industry has introduced and disseminated considerable quantities of the rush, with the object of securing a sufficient amount to supply American manufacturers with the product. The results accomplished have already proved encouraging, and the work will be continued.

GROWING OF SUGAR-BEET SEED.

The development of the sugar-beet industry continues satisfactory. The Bureau of Plant Industry is making an effort to improve the conditions affecting this crop in the matter of providing better seed, encouraging the use of fertilizers where fertilizers are likely to do good, studying the diseases with a view to discovering remedies for them, securing improvement in the matter of seed by the production of

beets which will give seed balls containing but a single germ. A little more than two years ago the Department again took up the work of establishing sugar-beet seed culture in the United States, and since that time work has been going on in four representative sections of this country. Strains of pedigreed seed are being established in New York, Michigan, Utah, and Washington State, while in Utah and Washington the industry is already assuming commercial importance.

In California also seed is being produced for local use. In Washington State 80,000 pounds of seed were produced in 1904, in Utah about 32,000 pounds, and in California about 50,000 pounds—a total of 162,000 pounds. As rapidly as the Department can bring home to all the sugar-beet factories the conviction that American-grown seed is as good and often better than the imported, these quantities will be increased, and it is a question of but a few years when the entire 5,000,000 pounds used in the United States will be produced at home.

As to the quality, American-grown seed has produced beets testing as high as 24 per cent of sugar, while the average percentage in all beets tested from American-grown seed during 1903 was 15.8 per cent. The average percentage of sugar in all beets grown in the United States, as shown by the factory returns of their total extractions, is a little over 11 per cent. It will be remembered, too, that the American seed has the benefit of only two years of careful selection. The work of establishing a pedigreed strain is slow, and years are required for the completion of such an undertaking; but the work is so far along that its success may be considered assured.

Two years ago the Department imported all the sugar-beet seed that was distributed for experimental purposes, while during the 1904 season 14,000 pounds of American-grown seed were distributed by the Department to selected farmers for testing in comparison with imported seed furnished to them by the factories. The reports on the stand secured, which is generally indicative of the yield, show that the American seed gave almost without exception a greater and a stronger growth than the imported seed. In a number of instances those portions of fields which were sown with factory seed gave such a poor stand that they had either to be resown or abandoned, while the portions sown with American-grown seed gave good stands and in no case required replanting. The factories during 1904 bought 34,500 pounds of American-grown seed, and a number of these factories are now negotiating with the American growers for contracts to supply the seed they need.

SUGAR-BEET FERTILIZERS.

In the fertilizer work efforts have been made to determine the effect of different fertilizers on tonnage and sugar content, and also their influence on various diseases.

Investigations along this line were undertaken in six sugar-beet States, seven brands of complete fertilizers being used, and in addition some separate experiments with the various ingredients used by themselves were made. The preliminary reports which have been received indicate that in many cases the effect of the fertilizers could be seen from the time of the germination of the beets. In a few cases the lines separating the fertilized from the unfertilized plots could be seen even at the beginning of the harvest. A recent report from one of the experimenters states that in his work with nitrate of soda the beets from the untreated plots were worth $5.20 per ton and yielded $54.35 worth of beets per acre. On the adjacent plot, where 300 pounds of nitrate of soda were applied at the time of planting, the beets were worth $5.30 per ton and yielded $74.57, a difference of $20.23 per acre in favor of the fertilization. The untreated beets tested 14.1 per cent sugar, while those fertilized tested 14.4 per cent.

REMEDY FOR SUGAR-BEET DISEASES.

The serious epidemics which have affected the sugar beet, like the leaf-spot disease of the East and the curly top of the West, have been investigated. Experiments on a large scale in different sections of the Eastern beet area have shown that the leaf-spot may be readily controlled by the application of Bordeaux mixture. This remedy has now come into general use.

SINGLE-GERM BEET-SEED BALLS.

In my last report attention was called to the efforts being made in the matter of developing sugar-beet seeds with single germs. The single-germ seed would do much to diminish the labor of thinning. The Bureau work in this field has been very satisfactory. Although the work has been running for only two seasons, decided progress has been made, and the single-germ seeds that have been selected have been found much more vigorous than the multiple-germ balls. The selected strains grown this year show a decided tendency to the production of a larger number of single-germ balls than the parent beet from which the selection was started, the average gain being about 20 per cent. In one case, over 3,000 single-seed balls were found on one beet. The work this year has been conducted in Utah and other sections where the sugar beet is at its best, and indicates that ultimately we shall in all probability be successful in the production of a beet having the desirable quality of producing only balls with single germs, that will substantially save hand thinning and avoid much expense in growing.

NEW CITROUS FRUITS.

The efforts that have been made by the Bureau of Plant Industry for a number of years in the matter of producing, by breeding, new

citrous fruits, so as to build up varied industries in the South, have met with very gratifying results. The hardy sour oranges which have been secured as a result of crossing the sweet orange with the hardy Japanese orange are now ready to distribute, and the work of distribution will be inaugurated in the coming winter. These new hardy oranges will unquestionably make possible the development of several important industries in the South. The oranges are valuable for marmalades, and from the fact that they may be grown in nearly all the Southern States, great possibilities for their usefulness are opened up. Even if they should not come into general use for manufacturing purposes or for general orchard planting, they will undoubtedly eventually become a feature in every dooryard throughout the South. Aside from their value for the manufacture of marmalades and preserves, they will be exceedingly useful for pies and other purposes.

There has been fruited this year for the first time a sweet orange of the hardy type. This is an accomplishment which the Department hoped for when it first inaugurated the work. The other new citrous fruits developed from the Bureau's investigations, such as the new tangelo, which is a cross between the pomelo and the tangerine, two new kid glove, or loose-skinned oranges, and several other creations, will all prove exceedingly valuable in sections where the climatic conditions will permit the growing of these more tender sorts.

AMERICAN TEA.

The Department has continued its work in the production of American tea. The more advanced investigations have been conducted, as heretofore, at Summerville, S. C., in cooperation with Dr. Charles U. Shepard. Doctor Shepard's tea gardens are now yielding from 8,000 to 10,000 pounds of tea annually. Owing to climatic conditions the crop this year will be light. Doctor Shepard has been devoting special attention to the improvement of factory processes. Several new inventions have been made by him in the matter of tea rollers, apparatus for the manufacture of green tea, and apparatus for a process of attrition, giving to the tea the beautiful bluish cast, or finish, which heretofore has been secured in foreign countries by the application of various chemicals.

Doctor Shepard's process puts this finish on the teas by simple attrition or friction, and is a marked advance over the old processes. The work of establishing a plantation in Texas has been continued. Tea beds were started on two types of soil—a rich sandy loam and a black, waxy soil. The plants on the black, waxy land have failed utterly. Fortunately this discovery was made before any extensive plantings had been undertaken, and it will lead to the extension of the plantings on the sandy loam soil. There are now on hand at our Texas station, which is located at Pierce, about 100,000 plants, which

will be put into the field this winter, planting about 40 acres. Sufficient additional seed will be put out to give another 50 acres next year.

AMERICAN DATES.

Encouraging results have been secured in the establishment of this industry in the southwestern portion of the United States. The date orchard at Tempe, Ariz., is progressing in a highly satisfactory way. The work here has been carried on in cooperation with the Arizona experiment station and has been under the direct supervision of Prof. R. H. Forbes. In cooperation with the California experiment station, work on the establishment of date culture in southern California is also being conducted. Ten acres of land have been secured for an experimental orchard and dates have been and are being planted there. The industry has been further encouraged by the publication of important reports on the subject, pointing out available localities where the crop is likely to succeed. There is a considerable extent of territory in southern California where practically all of the dates of a certain class which are now imported could in all probability be grown. These regions have been mapped and a special effort has been made to encourage the production of the crop therein. Various importations of the date have been made during the year and others will follow from time to time as the industry advances.

BULB GROWING.

The very specialized conditions of soil and climate necessary for the proper production of bulbs and the peculiar nature of the skilled labor required have made the establishment of the bulb industry difficult. However, investigations have shown that nearly all of the so-called Dutch bulbs may be grown in the United States, and that one by one the difficulties due to competition of cheap skilled labor, excessive cost of transportation, and the natural hesitancy on the part of purchasers to use an untried article will be overcome. A method has also been discovered by the Department experts to produce the Bermuda lily bulb free from disease. Of the millions of lily bulbs annually imported, it is safe to say that 40 per cent are more or less affected by disease. The eventual elimination of this trouble will be due to the work of the Department.

AMERICAN-GROWN DRUG PLANTS.

In Vermont, the previous success in growing opium poppies has been repeated with even more satisfactory results, both the white-seeded and blue-seeded sorts giving good crops. The attempt to cultivate this plant has been made with the object in view of testing the possibility of developing in this country a means of supplying our demand

for poppy alkaloids for medicinal uses. The present source of these—morphine, codeine, etc.—is to be found in crude opium, of which approximately a million dollars' worth is imported annually. The cost of these products is in large part due to the labor involved, and the efforts of the Bureau have been directed toward devising some process whereby the alkaloidal principles can be isolated directly from the extracted juices of the plant. Up to the present time no one has succeeded in obtaining morphine from these extracts.

During the year an expert of the Bureau has, however, met with success, and we are now able to obtain morphine directly from the expressed juices of the plant. This method does away with much of the expense. Experiments are now being undertaken to ascertain the practicability of obtaining morphine directly from the plants as a commercial source. If the experiment indicates a favorable outcome the plants produced in American fields will replace oriental opium as a crude source for morphine.

SWEDISH SELECT OAT.

The experiments of the Department with this hardy Swedish oat ceased some time ago, but highly interesting reports in regard to its usefulness are still coming in. It was introduced about five years ago by the Bureau of Plant Industry and distributed in a number of the Northwestern States. It has high qualities as a yielder and is especially valuable for resisting drought.

It has now become the most popular variety in the States of Wisconsin, North Dakota, Montana, portions of Idaho, South Dakota, and Minnesota. In one instance in Wisconsin, from the planting of 33 grains in the spring of 1899, there resulted a production of about 20,000 bushels in the year 1903, and a half million bushels in the present year, 1904. It is expected that the present year's crop will show that about 4 million bushels of this oat are being produced in Wisconsin. Although the highest legal weight of oats is 36 pounds to the bushel, this variety commonly weighs from 40 to 44 pounds in the Northern States, and occasionally reaches from 48 to 50 pounds to the bushel.

SPECIAL WORK ON COTTON.

The Bureau of Plant Industry has made a special effort to aid the farmers of Texas, Louisiana, and other Southern States where the Mexican cotton boll weevil has already appeared or is likely to appear. In all sections the energies of the Bureau have been put forth to encourage better methods of farming, with highly gratifying results.

COOPERATION WITH FARMERS.

With a view to bringing directly home to the farmers of Texas and Louisiana, especially those in the boll-weevil districts, the advantages

of better methods of cultivation, the value of early maturing seed, etc., the Bureau organized an extensive line of propaganda work. The farmers in the various counties were organized and were brought into cooperation in such a way that large plantings were made under the direct supervision of the Department. Tracts of 5, 10, 15, and 20 acres were handled by individual farmers, under working plans furnished by the Bureau, the object being in all cases to demonstrate the practicability of growing cotton despite the presence of the weevil.

More than 5,000 farmers were engaged in this work, and the results have been highly satisfactory. At a recent meeting held in Houston, where more than 200 representative farmers from all parts of the State were present, records were presented showing the yields of cotton under the plans of the Department compared with old methods. The increased yields, ranging all the way from 25 per cent to 100 per cent in districts badly infested by the weevil, show that by proper methods of culture, the use of early maturing varieties of seed, and the application of proper fertilizers excellent results may be obtained. A complete record of the yields from the various farms conducted under the direction of the Bureau has been kept, and a report embodying these data will soon be published.

COOPERATION WITH THE TEXAS AGRICULTURAL COLLEGE.

In the special work on cotton the Bureau of Plant Industry has been in the closest cooperation with the Texas Agricultural College. The president of the college has taken charge of the farmers' institute work, and with the aid of several men selected by him and men furnished by the Department all parts of the State were visited early in the spring, and the necessity for giving strict attention to better methods of cultivation was set forth. This institute work will be continued during the present autumn and winter. In addition to the institute work, the Bureau has been cooperating with the college in the matter of the breeding of cotton, the testing of fertilizers, and other important lines of investigation. Thorough harmony prevails, and every effort is being made by both the Department and college officials to make the work effective.

COOPERATION WITH LOUISIANA AUTHORITIES.

Cooperation has also been secured with the Louisiana authorities, and a number of important lines of work have been carried on in the State. The propaganda work, as described for Texas, has also been conducted in portions of Louisiana. Demonstration work with fertilizers has been carried on; also other investigations having for their object the encouragement in every way of better methods of farming in advance of the approach of the weevil.

DIVERSIFICATION FARMS.

As another feature of the work in the South, plans were made and put into operation establishing diversification farms at various places. The object of these farms was to show the value and importance of diversified agriculture. It was found unnecessary for the Bureau to expend any funds in the development of these farms, except in minor ways for the purchase of certain special seeds, and sometimes for special fertilizers where such were to be used. In all cases the business interests of the respective communities gladly cooperated with the Bureau to the end not only of securing a desirable farm for the purpose, but assuming all responsibility for its support. In every instance efforts have been made in organizing these farms to make them not only self-supporting but profitable. The main object of the work is to show that by diversified agriculture the lands may not only be improved, but more money can be made than in farming with a single crop.

Thirty-two of these farms have been or are about to be established, of which 16 are in Texas, 5 in Louisiana, 3 in Georgia, 2 in Alabama, 3 in Mississippi, 2 in South Carolina, and 1 in Florida. The general method employed in locating, organizing, and conducting these farms is to first determine in what section of the State the various farms are to be located. An effort is then made to find a progressive farmer who is desirous of encouraging diversified farming in his section, and who is willing to permit the Department to aid him in doing it. When a suitable arrangement has been made, a representative of the Department and the State experiment station make a thorough study of local conditions with reference to cropping possibilities, markets, advantages, etc. A system of records is instituted, which enables the Department to secure detailed information regarding every phase of the management of the farm and the results secured. After the farms are established, other farmers are encouraged to visit them, this being done largely through the cooperation of the State experiment stations.

BREEDING NEW TYPES OF COTTON.

Extensive work has been inaugurated in Texas having for its object the breeding of new types of cotton better adapted to meeting the conditions brought about by the invasion of the weevil. More than 100 varieties of cotton have been grown and many selections have been made. This is necessarily slow work, but already very encouraging results have been secured in the matter of obtaining earlier and better yielding types—types that are better able to resist storms and types for special purposes in several regions.

DISCOVERY OF THE GUATEMALAN ANT.

During the year an important discovery was made by an officer of this Bureau, viz, the discovery in Guatemala of an ant that destroys the weevil. Eighty-nine colonies of these ants were brought into Texas and are now being thoroughly studied with a view to determining their value as a means of checking the serious inroads of the cotton insect. After the introduction of the ant by this Bureau further work on its distribution, habits, etc., was placed under the Bureau of Entomology.

WEEVIL-RESISTANT COTTON.

Another and perhaps more efficient method of combating the boll weevil than by means of the ant has been discovered very recently. The hope of finding a variety of cotton not subject to injury by this pest has been cherished for several years, but hitherto no method has been ascertained by which the plant could offer effective resistance to the insect. It has been found, however, that in some varieties of cotton the presence of the larva, instead of blasting the buds and bolls, often stimulates a special growth of internal tissue which kills the young weevil. This is not merely accidental or abnormal, but is in the nature of a protective adaptation developed as a final result of a long struggle for existence between the cotton and the weevil in tropical America. The insect could not breed or perpetuate itself in the presence of a variety of cotton in which the formation of the new protective tissue occurred regularly. It is accordingly within the range of scientific possibilities that resistant varieties of cotton can be found in tropical America or developed by selection, and work on this line has been begun.

DISTRIBUTION OF EARLY-MATURING VARIETIES OF COTTON SEED.

With a view to encouraging the planting of early-maturing varieties of cotton, such as King and Parker, a large distribution of these varieties was made in the State of Texas and a portion of Louisiana during the year. Small quantities were sent to farmers, the cooperation of Senators and Members of Congress being secured for the purpose of distribution. Records have been kept of all the farmers who received this seed, and reports are now being returned to the Department as to its value as compared with ordinary sorts. In most cases very encouraging reports have been received as to the use of the early-maturing seeds, and the chief value of the work will be in the fact that from this distribution the farmers themselves may start the selection of stock seed for future planting.

INVESTIGATION OF THE COTTON ROOT-ROT.

As a feature of the work in Texas a special effort has been made to obtain information as to the best methods of combating the cotton root-rot. This disease has been very serious the past season, destroying large areas of cotton in many portions of the State. Efforts have been made to secure resistant types, but so far the results obtained have not been very encouraging, although some progress has been made. Experiments have been made for the purpose of determining the value of soil treatments, seed treatments, and other methods of combating this disease, including crop rotation. This work has just been started, and it is too early yet to determine its value.

PROGRESS IN COMBATING PLANT DISEASES.

CRANBERRY DISEASES.

Important advances were made during the year in the matter of treating cranberry diseases. The cranberry crop is an important one in this country, aggregating in value a million dollars or more annually. In recent years several destructive diseases have caused a great deal of damage, and until the Department began its investigations little progress had been made in the matter of treatment. Experiments the past year in the treatment of one of the most serious diseases, commonly known as "scald," have been quite successful. It has been demonstrated that this particular disease may be prevented by the application of fungicides at very small expense.

ERADICATION OF LITTLE-PEACH DISEASE.

The efforts made by the Department in the matter of demonstrating the feasibility of eradicating the little-peach disease from the orchards of Michigan and other States have been continued on a large scale. A section 3 miles square in Michigan was selected for this work and the orchards were thoroughly gone over three times during the months of July, August, and September and all of the affected trees were destroyed. The object of this experiment is to demonstrate what is believed to be a fact, viz, that the disease can be entirely eradicated by the extirpation process.

WINTERKILLING OF FRUIT TREES.

The extreme cold of the past winter caused the extensive killing of fruit trees in many portions of the Northern States. At the approach of spring the trees had the appearance of being seriously injured, and undoubtedly a great many would have been destroyed but for the timely aid rendered by the Department in the matter of suggesting proper means of handling such injuries. A brief report was issued as a guide to the owners of the frozen trees, and this undoubtedly saved many orchards from needless destruction.

A NEW DISEASE OF TOBACCO.

The most serious disease of tobacco in the United States during the past season has been the new malady called "wilt." This has been very destructive in certain portions of the South, and so rapid has been the spread of the trouble that it threatens the complete destruction of the large tobacco industry in North Carolina. Evidence is at hand that this disease is very similar to other wilt troubles, and that it may eventually succumb to treatment through the selection and development of resistant types. Work with a view to securing these types is now being conducted.

WILT DISEASE OF COTTON AND COWPEAS.

The success of this Bureau's wilt-resistant varieties of cotton was more marked last season than ever before. An improved selection from the Rivers cotton remained entirely free from the wilt on the worst infected land on James Island, South Carolina, where the finer types of Sea Island cotton are grown. These cottons, originating through the efforts of the Department, are not only wilt resistant but have a finer and better staple than the original nonresistant strains, thus disproving the assertion that resistance to wilt had been obtained at the sacrifice of quality. Considerable quantities of the seed of resistant and desirable strains of cotton have been obtained and distributed. In connection with this work the wilt of the cowpea has also been studied and resistant types secured and distributed. About 200 bushels of the resistant cowpea seed were sent out last spring. This work is being developed as an auxiliary to the cotton investigations, as it has been found that many thousands of acres of sandy soil in the Gulf States are infected by both the wilt and root-knot, and the cultivation of the ordinary cowpea results in great injury to the cotton.

ADVANCES MADE IN FORAGE-CROP WORK.

ALFALFAS AND CLOVERS.

Alfalfa has attracted more attention on the part of farmers in the eastern half of the United States during the past two years than any other crop. The Department has demonstrated that it can be grown in almost every State in the Union. Varieties have been found which withstand the rigorous winters of the northwestern prairie States. Other varieties have been found which are immune to the alfalfa leaf rust. There is still much to be learned concerning the adaptability of alfalfa to various types of soil in the Eastern States, and much time is being devoted to the solution of this problem. The cultural methods required for establishing and maintaining alfalfa meadows are also receiving due attention. The subject of clover sickness, a matter of very great importance to farmers throughout the clover region, is

being investigated. New varieties of clover which appear to possess some advantages over the standard varieties grown in this country have been secured and are being propagated with a view to introducing them generally in the clover region as soon as sufficient seed is available. Some of our native clovers are being grown under farm conditions in order to determine whether or not they are worthy of domestication. One or two of them are promising, particularly for sections of the country where red clover does not thrive.

SOIL AND SAND BINDERS.

Methods of holding drifting sand in place have been thoroughly worked out. An agent of the Department has made a careful study during the past two years of the methods which have been developed in Europe in work of this character, and demonstrations of these methods are now being made in portions of the country where drifting sand is most troublesome. Attention is also being given to plants adapted to hold banks and the sides of cuttings in place, and several plants which possess high value for this purpose have been found. This work is of particular interest to civil engineers, and in prosecuting it the most hearty cooperation from them has been received.

RANGE INVESTIGATIONS.

During the past year a large amount of information regarding the carrying capacity of the ranges in various parts of the West has been collected. The fact that intelligent management will bring the ranges back to their primitive state of productiveness has been established. For two years past an area of fenced range in Arizona, in which all types of range land are represented, from absolute desert to good mountain range, has been under careful observation. Two years' protection from stock has sufficed to make this range nearly as productive as it was in its virgin state. The methods of management used by parties who own or control considerable areas of range land are being studied. It is considered to be definitely demonstrated that there is no chance of improving range conditions except where stockmen are enabled to control the ranges upon which their stock feed, and data are being collected which will furnish valuable information as a basis for legislation concerning range lands. It has been demonstrated that a number of species of plants may be introduced upon the ranges by practicable means.

In nearly all cases the plants which have been of value for this purpose are annuals producing large quantities of seed. The possibility of introducing other plants upon the range is still being investigated. In this connection a careful study of the large collection of annual grasses from Europe in our extensive herbarium is being made, with a view to finding species which appear to be adapted to conditions on our Western ranges. Arrangements have been made whereby seed of

some of the most promising of the species may be secured for use in the investigations of this subject. It has been demonstrated that in the mountain ranges where there is considerable rainfall a number of standard grasses and clovers may be established upon the range by methods that are entirely practicable. In the mountain region in the State of Washington, by protecting the range from the depredations of nomadic herds of stock, the Bureau has been able to establish such grasses as timothy, redtop, bluegrass, and white clover, thus adding enormously to the productive capacity of these ranges. During the year much assistance has been rendered to ranchers by outlining methods of handling their ranches.

THE CACTUS AS A FORAGE PLANT.

Much of the range country is covered with a sparse growth of cactus, which for the most part is looked upon by stockmen as a nuisance. During the past year a number of methods have been found by which the cactus plant may be utilized to advantage as stock feed. The value of the more promising species for forage purposes, the length of time required to mature a crop of cactus on land from which the old growth has been harvested, and the feasibility of establishing cactus plantations where they may be needed, are now being investigated.

ALKALI-LOVING PLANTS.

The increase of the area of alkali lands in the irrigated districts of the West has given added importance to plants that may be grown upon such lands. Several such plants are available, and the Bureau is investigating the forage value of these plants, as well as methods required for their cultivation. A few years ago the Australian saltbush was shown to be adapted to lands of this character, and a great deal of interest in this plant was aroused among Western farmers. Recent investigations by the Bureau indicate that the cultivation of the plant has practically ceased. There is no question of the value of the Australian saltbush as a forage plant or of its adaptability to strong alkali lands. The principal difficulty with the plant seems to be that proper methods of utilizing it have not been worked out. The Bureau has undertaken to find what place it can be made to occupy in Western agriculture and the methods by which farmers can take advantage of its demonstrated value. Considerable areas of a number of other forage plants known to be adapted to alkaline conditions are being grown with a view to determining their forage value.

INVESTIGATIONS OF GRASSES, FORAGE PLANTS, AND STOCK FEEDING.

The office of Grass and Forage Plant Investigations is now in possession of the varieties of timothy developed by Dr. A. D. Hopkins. Some of these are greatly superior to timothy as ordinarily grown by farm-

ers. They are being propagated with a view to making the seed available, which it is hoped will be within two more years.

Mr. A. B. Leckenby, director of the Eastern Oregon experiment station, has kindly turned over to this office 23 varieties of *Bromus inermis* secured by him during the past two years. These are being grown with a view to rendering the best varieties available for distribution.

The separation into varieties of such standard grasses as redtop, Bermuda, orchard grass, and meadow fescue has been undertaken. Work of this character already done indicates that all of our standard grasses are really mixtures of a large number of established varieties. Some of these varieties are much superior to the grasses ordinarily grown. It is hoped within a few years to be able to offer farmers small quantities of seed of improved forms of all the standard grasses.

WEIGHT AND VOLUME OF HAY.

The office of Grass and Forage Plant Investigation has shown that the ordinary rules in vogue for determining the volume of hay in the stack are not reliable, and it has developed formulæ that give reliable results. It is now investigating the number of cubic feet of hay per ton for hay under various conditions as to kind of hay, size of stack, and length of time it has been in stack.

DOMESTICATING NATIVE GRASSES.

A considerable number of native American grasses have shown themselves to be adapted to regions where at present hay grasses are wanting. Several of these are being grown under field conditions during the present season with promise of success. The Bureau is gathering a considerable quantity of seed of other grasses this year and will give them a trial, particularly in the semiarid portions of the West, at the earliest opportunity. It is believed that hay grasses can be found for the Western plains where the average annual rainfall does not exceed 15 inches.

WINTER PASTURES FOR THE SOUTH.

It is estimated that during the past winter one-third of the range stock of some of the ranges in Florida perished for lack of proper nourishment. The winter being severe, losses of range stock were common in all parts of the South. It has been demonstrated that a number of plants can be made to furnish satisfactory pasture throughout the winter months in the South. During the past year a large amount of information concerning these plants and their adaptability to different soils, and the cultural methods required for their successful growth, has been collected. During the present season it is planned to cooperate with Southern experiment stations and Southern farmers in testing a number of these plants for winter pasture purposes.

GULF COAST CROPS.

The agrostologists of the Bureau are studying the forage value of the velvet bean, beggar weed, Mexican clover, and cassava for the region adjacent to the Gulf of Mexico, to which our standard forage crops are not adapted. They have shown that a well-nigh perfect stand of cassava can be obtained by germinating the canes in a cold frame or hotbed before planting them in the field. Heretofore the methods used produced ordinarily not more than half a stand of this crop. Methods of keeping cassava canes over winter are still being investigated. These investigations indicate that the most important factor in keeping the canes is maturity. It is extremely difficult to prevent decay of partially matured canes during the winter months. Forty-two varieties of cassava have been secured, one of which last year produced seed in southern Mississippi, although planted nearly two months later than the best planting season. This year one plant was grown from this seed. It seems probable that some of these varieties may be made to thrive considerably farther north than cassava has yet been grown.

FORAGE CROPS FOR SOUTHERN FLORIDA.

The development of truck farming in southern Florida has rendered urgent the need of forage crops for the work-stock used on the truck farms and for the dairy cattle which supply milk to the numerous hotels. Feed for this stock is now shipped long distances at great expense. It appears that Guinea grass and Para grass are adapted to climatic and soil conditions in that section and their possibilities for this purpose are being investigated. Guinea grass seems to possess particular value for hay production, while Para grass appears to be promising as a pasture grass, particularly for wet muck soils. The Bureau is preparing to give them an extended trial.

PACIFIC COAST PROBLEMS.

The office of Grass and Forage Plant Investigations is searching for forage crops to grow in alternation with wheat in order that farmers in the great wheat regions on the Pacific coast may be enabled to secure more than one crop every other year on their fertile lands. A number of grasses are also being studied with reference to their adaptability to dry lands in that section, where there are many thousands of acres of land too dry for any of the standard forage crops.

JOHNSON GRASS.

The agrostologists of the Bureau have demonstrated that the formidable pest known as Johnson grass may be completely destroyed by practicable means and that it may easily be held in check. They are now making demonstrations of the methods developed in their

investigations and are endeavoring to devise an implement for removing Johnson grass rootstocks from the soil.

SOILING CROPS.

With the development of stock farming and more intensive methods, particularly in the eastern half of the United States, the practice of soiling is becoming more important. Farm practice with reference to soiling crops is being studied with a view to formulating systems for all sections of the country. In this, as in all investigations, the experience of successful farmers has been of great assistance.

CROPS FOR OVERFLOWED LANDS.

The problem of utilizing lands subject to annual overflow has continued to receive attention. Particular attention has been given to short-season annual crops, such as millet, early varieties of corn and sorghum, buckwheat, cowpeas, soy beans, and rape, for lands that are free from water during midsummer and the fall season, and all these crops have been grown successfully on land that was covered with water until the latter part of June. The native grasses which are extensively cut for hay on overflowed and swamp lands are also being studied with a view to making seed of some of the best of them available on the markets, so that farmers who are in need of such grasses may be able to obtain their seed.

FRUIT-MARKETING INVESTIGATIONS.

Next in importance to ability to produce choice fruits is the existence of a sufficient demand for them at prices that will yield a fair profit to the grower. In fact, without reasonable assurance of market demand for the product at fair prices, the planting or maintenance of commercial orchards or vineyards is folly. From the nature of their product, which is at the same time perishable and an article of luxury rather than of absolute necessity to the average consumer, the prosperity of our fruit growers is more dependent upon the price of their product at the time of harvest than that of almost any other agricultural class. Glutted markets at such times are peculiarly disastrous both to individual fruit growers and to the regions in which commercial fruit culture has become an important feature of agriculture.

REMEDY FOR OVERSUPPLY.

The avoidance of gluts is, therefore, of very great importance to the entire fruit industry. While many remedies have been suggested, that which appears most practicable and reasonable is the wider distribution of the product. For this reason the chief line of investigation in fruit marketing has been the determination of methods best adapted to the harvesting, packing, storing, and forwarding of fruits

to points relatively distant from their places of production, with a view to developing wider demand for them, both in the United States and foreign countries. Chief attention has been thus far given to problems connected with the development of the trans-Atlantic export trade, the most important work having been done with summer and winter apples, peaches, and pears.

DEVELOPMENT OF EUROPEAN MARKET FOR PEARS.

While some important points are yet unsettled in connection with these fruits and require the continuation of experimental work upon them, some gratifying evidence of the practical value of this line of work appears worthy of notice. The determination of the methods of handling and packing necessary to insure safe delivery of eastern-grown Bartlett pears in European markets during the season of 1902–3 was followed in the fiscal year 1904 by large and profitable shipments of this fruit from Eastern orchards to British markets. While official statistics are not available, it is known through commercial channels that more than 75,000 packages of this variety were thus exported, while the total shipments of Eastern-grown summer and fall pears amounted to at least 165 carloads. While this is but a small proportion of the entire pear crop, its removal from the domestic market was undoubtedly an important factor in maintaining the fair prices that prevailed in our markets during that season, notwithstanding the large crop of that fruit.

SHIPMENTS OF WINTER APPLES.

Largely through the efforts of the Department, which pointed out the way through experimental shipments which demonstrated the practicability of direct shipments of winter apples to French markets, an encouraging beginning in commercial shipments has resulted. Commercial estimates indicate that during the fiscal year 1904 our direct exportation of apples to France amounted to 200 carloads, which is about twelve times as much as the annual average of the preceding five years. With systematic and judicious continuation of such shipments until consumers become accustomed to American varieties and methods of packing, the French market should rapidly become an important factor in our export apple trade.

The most important experimental export work has been done upon winter apples, as the magnitude of the apple industry warrants first attention. A series of shipments to the principal European markets, in an effort to determine the relative value of the barrel and the box as export packages for this fruit, has disclosed on the whole very little difference in the net results where ordinary "No. 1" fruit was shipped, either with or without paper wrapping. These results are not considered conclusive evidence of the relative merit of these packages, how-

ever, as it is known that in such matters repeated tests are required to insure correct interpretation of results. Additional work along this line will be done during the coming year.

EFFECT OF DEPARTMENT WORK ON EXPORT TRADE.

While exact determination of the effect of these investigations on the development of export trade can not be ascertained, it is interesting to note that a comparison of commercial estimates of the crops of the successive seasons with the exports of the corresponding fiscal years shows a steady increase in the proportion of the crop exported, as well as a large increase in the quantity shipped, the proportion exported having risen from less than 1 per cent of the estimated total crop for 1899–1900 to nearly 4¾ per cent in 1903–4, when the total was 2,018,262 barrels, valued at $5,446,473, in the latter year.

PROGRESS IN FRUIT-STORAGE INVESTIGATIONS.

The cold storage of fruit has grown to large proportions in the last decade, nearly 3 million barrels being cold-stored in the United States last year. When the Bureau began investigations along this line three years ago there was little exact information about the factors which influenced the keeping of fruit. It was popularly supposed that a cold temperature was the most important consideration in successful fruit storage, and that the frequent heavy losses were generally due to unfavorable storage conditions. As a result of the investigations, especially during the past year, it has been demonstrated that the condition in which the fruit is grown and the manner of handling it determine to a large extent the keeping quality as well as the ultimate value of the fruit. Fruit grown to unusual size, like that from rapidly growing young trees, from trees producing a light crop, or from trees forced unduly by tillage or by other orchard treatment, has been shown to deteriorate from one to three months earlier than the same variety grown more slowly.

The investigations are showing that fruit intended for storage must be handled with the utmost care in picking, packing, and shipping, and stored quickly after picking in well-ventilated rooms in a temperature of about 31° to 32° F., if the storage difficulties now most common are to be overcome.

CAUSES OF LOSS IN SHIPPING PERISHABLE FRUITS.

During the past season the Bureau has undertaken to determine what factors cause the frequent losses that occur in shipping perishable fruits, such as peaches, to distant markets. From 5 to 30 per cent of decayed and soft peaches in the top layers of a refrigerator car on arrival at destination from the Southern peach areas is not uncommon, especially in moist, warm weather. Several cars in which the fruit

was cooled quickly after picking to about 40° F. were shipped from Georgia to Northern markets. All of this fruit arrived in practically perfect condition, demonstrating that the common practice of loading perishable fruits in a heated condition is one of the important factors in causing serious economic losses. Furthermore, it was demonstrated that the cars could be loaded more heavily with little danger of the fruit in the top of the car deteriorating, and the fruit was harvested and reached the consumer in a riper and better condition on account of the better carrying quality.

FARM HANDLING AND STORAGE.

In addition to the work outlined, the Bureau is endeavoring to supply the demand for information from fruit growers by determining what cold-storage systems are best adapted to farm use.

There has been a demand for experimental work in fruit marketing and storage from fruit growers on the Pacific coast. The funds available have limited the work to the East up to this time. During the present winter the investigations will be extended to the citrus industry of California, which in the season of 1903–4 amounted to 30,000 carloads of oranges and lemons. The losses in transit and in warehouses when the warm spring weather sets in are sometimes very large. It is proposed to find out what relation the present methods of picking, packing, handling, and shipping the fruit bear to these losses, in a manner similar to the investigations with deciduous fruits.

INFLUENCE OF INVESTIGATIONS.

That these investigations in fruit storage are having an important influence in improving the commercial methods of handling our fruit products is seen in their growing application by fruit growers, handlers, and warehousemen, all of whom are making demands on the Department for information and for enlarged investigations.

NEW PLANT CREATIONS.

The plant-breeding work, heretofore described, has been continued along a number of new lines. Great advances have been made in the matter of securing new and desirable long-staple cottons. During the last three years a number of long-staple Upland varieties of cotton have been originated, and these have come to be cultivated to some extent in certain parts of the cotton belt, and very generally in the rich bottom lands of the Mississippi and Red rivers in Mississippi, Arkansas, Louisiana, and Texas. A large number of hybrids have been made for the purpose of securing Upland types of long-staple cottons, which can be put into general cultivation, and which will be superior to those now in use. Several of these hybrids are approaching fixity of type. Among these are some having a staple from 1¼ to 1⅝ inches in length.

BREEDING OF CEREALS.

In the breeding and improvement of corn important advances are being made. The main object of this work has been the selection of strains of corn best adapted to the different sections of the United States. The work is being conducted in cooperation with twenty or more State experiment stations and many farmers. Each year the Department obtains pure seed from the originators and breeders of the leading strains of corn in various sections of the country, and is sending this seed to different localties for comparative tests. At the same time extensive hybridization work is proceeding for the purpose of securing sweeter, more tender, and more productive strains of sweet corn for table use. Connected with this work, also, there are being studied problems relating to the handling of seed corn, seed selection, etc.

Extensive breeding investigations of oats have been carried on, mainly for the purpose of producing a profitable variety for the rich farm lands of the great corn-growing States, where oats are used in rotation with corn. The production of a more desirable oat for meal constitutes a part of this work. Some very promising hybrids have been obtained from the naked oat of China—the so-called "European hull-less oat."

BREEDING POTATOES AND TOBACCO.

In the improvement of potatoes important work has been conducted along two lines—(1) type selections, and (2) the production of new seedling varieties. This work was begun in 1902, and already very promising results have been obtained, especially from some of the hybrids.

Some of the most important investigations in the matter of breeding and selection have been inaugurated in connection with the growing of tobacco. This work is conducted along two principal lines—(1) the selection of individual types in the varieties, and (2) crosses between different varieties. Extensive work has been carried on in Connecticut, where both shade and outside tobacco are grown. The work conducted so far has shown unquestionably that the desirable characteristics in the leaf can be fixed from the first year's selection. In this work nine different types have been used and more than 300 selections have been made of each type. One hundred and twenty-five plants are used as a standard for each selection. Thus the work of selection alone has involved the use of something over 40,000 plants.

The work has been conducted in such a way that all the plants have been grown under tent shade, and the entire development of the leaf, from the seed bed to the manufactured product, can be followed. Allied with this work extensive investigations have been made as to the effect of hybridization. Hybrids are easily secured, and from the evidence already obtained by experience in the Connecticut Valley it

is believed that the improvement of tobacco by crossing is practicable and can be successfully carried out according to plans now in operation.

NEW FRUITS.

Other important lines of work, having for their object the securing of new types of grains, fruits, and other crops, have been carried on. Important work has been done in the matter of developing new varieties of pineapples, new varieties of pears, and other fruits.

PROGRESS IN SEED AND PLANT INTRODUCTION.

The work of introducing and establishing new plants from foreign countries has resulted during the year in the introduction of 1,429 selected kinds of seeds and plants. These have been secured through correspondence and by means of our agricultural explorers, one of whom was sent to the Russian Caucasus in search of new varieties of fruits; one to the West Indies for tropical cassava; a third made an extensive study of the European flax regions, and a fourth visited Mexico in search of southern country apricots. Such a large number of plants, introduced during previous years, remained to be adjusted to American conditions that the efforts this year, more than last, were concentrated on the domestic side of the problems, and no very extensive exploring trips were undertaken. Notwithstanding this, however, a number of new important importations were made. A shipment of over 350 date suckers, representing 42 varieties, mostly new to America, was made from the oasis of Biskra in the Sahara. Two hundred and seventy samples of different strains of European flax were collected. A collection of 19 selected varieties of grapes from the Russian Caucasus was arranged for. Two hundred and fifty pounds of seeds of the true pistache and smaller quantities of seeds of related species for stocks were imported from Turkey and Central Asia. Thirty-three varieties of mangoes of recognized superiority were secured from Central India in Wardian cases for Florida cultivators.

NEW PLANTS FROM EASTERN COUNTRIES.

A shipment of 157 bushels of berseem was made from the valley of the Nile. Two thousand pounds of the famous pedigreed Hanna barley were secured from its originator in Moravia. Two hundred trees of the hardy Vladimir cherry, for trial in the Northwest, were imported from Russia. One hundred and five varieties of French phylloxera-resistant grapevines were secured for trial in infested California vineyards. New species of the lily, from the Philippines and the Neilgherry hills of India, were introduced for breeding purposes. The yang-taw, from Central China, an entirely new fruit-producing vine, was presented to the Department by Consul Wilcox, of Hankow. A number of promising

resistant South African grapevines, a collection of Canary Island plants, some East African sorghums, and an interesting clover from Uganda were some of the gifts of Mr. Barbour Lathrop, whose expeditions in search of plants for this Department have been mentioned in previous reports.

DURUM WHEAT AND OTHER PREVIOUS INTRODUCTIONS.

Many of the important introductions from previous years still occupy the attention of the office, and either require fresh material from abroad or necessitate field experiments. The durum wheat area has been greatly extended, as already noted. A new date garden in the desert region of southern California has been established in cooperation with the State experiment station. The Egyptian cotton introductions are leading to the production of new hybrid races of promise. The Malin or Moravian horse-radish has proved a success. Japanese bamboo and Mitsumata paper plantations are being arranged for. Tropical mangosteens, imported by post, are being successfully propagated for distribution in Porto Rico and Hawaii. Egyptian clover is being given an extensive trial in Texas, Louisiana, and California. A new seedless pomelo from Siam has been grown for distribution. The Turkestan alfalfa has seeded in several localities, and the securing of American-grown seed of this variety is now a possibility.

CONGRESSIONAL SEED DISTRIBUTION.

As pointed out in my previous reports, constant efforts are being made toward the improvement of methods of securing and handling the general seeds for Congressional distribution. Improved appliances have been perfected for the mechanical work, and improved methods have been adopted for securing the seed. The work is now all under the direct supervision of efficient officers of the Bureau of Plant Industry. Every effort is being made to improve the quality of the seed by securing pure stocks. Extensive work is being conducted in the matter of a critical study of varieties under different conditions of soil and climate. Testing gardens for this purpose have been established in a number of localities, and the work is under the supervision of a thoroughly competent expert horticulturist. Every effort is being made to encourage home seed growing. Practically all of the vegetable seed now distributed by the Department is grown in the United States.

A few years ago nearly all of the flower seed, except sweet peas, was imported. Now fully 75 per cent is grown here, through the encouragement offered by the Department in this work. A special effort is put forth in the matter of distributing promising varieties of cotton, tobacco, forage crop, and other seeds. The cotton experts of the Bureau have been constantly at work securing new and desirable sorts

wherever they have been found in connection with the other cotton investigations. The results of this continuous distribution of improved strains are already beginning to show in a number of sections of the South.

In the handling of this enormous work which Congress puts upon the Department, the necessity for strict business methods has been fully observed. The work of handling one branch only of this problem involves the securing of more than 25 carloads of special seed, and the testing, packeting, and mailing of this large quantity to all parts of the United States. The systematizing of all the operations has been so perfected that there is little or no friction at the present time.

NITROGEN-FIXING BACTERIA.

Extensive practical tests were made the past season with nitrogen-fixing bacteria for use in connection with leguminous crops. The results have been even more successful than we had anticipated. Hundreds of applications have been sent in from every State in the Union for material with which to inoculate various crops. Practically all of these requests have been complied with in such a way that a record of the results could be obtained. The results show conclusively that where the organisms are used in accordance with the directions issued by the Bureau increased yields, ranging from 15 to 35 per cent, are secured. Furthermore, many farmers have been successful in getting stands of clovers and other crops on soils where failure has resulted heretofore. The several strains of bacteria sent out from the Department have proved valuable even on soils containing the uncultivated organisms in abundance. It was discovered during the year that tubercle formation is not necessary to successful inoculation.

The bacteria can be present in the roots of legumes in a very efficient state with no tubercle formation whatever. The material for inoculating an acre of soil by the methods which have been developed costs the Department about 1 cent per acre and the farmer scarcely anything to apply it. So great has become the demand for this material that private concerns have become convinced that there is profit in preparing and distributing it, and several firms are now announcing their preparedness for doing this. Widespread interest in the subject has been manifested by the agricultural press and the magazines, and as a result of this publicity the demand for the organisms is constantly increasing.

INVESTIGATION OF PLANTS POISONOUS TO STOCK.

In parts of the Northwest where sheep grazing is an extensive industry, very great losses have been experienced in many sections, due to the so-called "loco disease." This disease is commonly attributed to the eating of the loco weed, by which parts of the range are

almost monopolized. In one county in one of the Northwestern States in which sheep grazing has been the chief industry, the disease has made such inroads that many stockmen have been obliged to give up sheep grazing altogether, with the result that land values have depreciated and the sheep from this region are viewed with suspicion by buyers.

During the past two years investigations have been made to test the relation between this devastating trouble and the so-called "loco weed" prevalent in this section of the country.

FIBER PLANTS.

The textile industries using plant fibers have been growing, with increased demand for twine, cordage, and woven goods, but, with the exception of cotton, the production of plant fibers in this country has not kept pace with the consumption. The raw fiber imported during the fiscal year ended June 30, 1904, was valued at more than $47,000,000. This amount included about $9,000,000 worth of cotton, chiefly Egyptian and other grades, not produced here commercially. The other fibers imported were mostly sisal, manila, jute, flax, istle, and hemp. Investigations of all these fibers have been conducted by the Bureau, special attention being given to those likely to succeed in our own country.

DRY-LAND AGRICULTURE.

In my last annual report attention was called to the importance of developing a system of agriculture adapted to the semiarid areas of the United States where general irrigation for ordinary crops is not practicable or possible owing to the small annual rainfall and the consequent lack of sufficient water. This is true of nearly one-fourth of the entire arable land surface of this country. It is believed, however, that a profitable system of agriculture can be developed for these areas by securing crops which will grow with a very small amount of water. Considerable progress has been made in this direction and facts have been secured which show the necessity of an immediate and thorough investigation of the conditions affecting the moisture requirements of crop plants for growth in semiarid regions, such as Kafir corn, alfalfa, drought-resistant wheats, and other crops at present unknown to American agriculture.

WATER PURIFICATION INVESTIGATIONS.

Attention was called in my last report to the investigations being carried on by the physiologists of the Bureau of Plant Industry with a view to finding methods of destroying obnoxious algæ in water supplies. The method discovered consists in using extremely dilute solutions of copper sulphate. After a chemical and microscopical

study of the water to be treated, and identification of the contaminating organisms, the amount of copper required to be effective is determined and introduced in the form of sulphate. Numerous tests have been made in cooperation with boards of health and water engineers in a number of large reservoirs, and the method has proved remarkably efficient and successful. The fact that one part of copper sulphate to one hundred thousand parts of water will at ordinary temperatures completely destroy the bacteria causing typhoid fever and Asiatic cholera suggests the great usefulness of copper in fighting these diseases and other maladies caused by closely related organisms. Physicians and public health officials have taken great interest in this work, and will doubtless make prompt and thorough tests of the usefulness of copper in such cases.

CONSTRUCTION OF NEW GREENHOUSES.

The new buildings planned for the Department made it necessary to remove the glass houses now on the grounds. A special appropriation of $25,000 was secured for this purpose, and the new houses have been erected and are now complete. This new range consists of 8 modern houses, each 142 feet long, which were put up under contract. Three additional houses have been put up by the Bureau's force of workers, and two of the smaller houses have been moved from their old location to the new one. The new range is much more satisfactory than the old one, and it will be devoted to various lines of work connected with the Bureau. The contract for the new houses was let on June 1, 1904, and they were completed on September 1 of the same year.

ARLINGTON FARM.

During the year the important work of improving the soil conditions at the Arlington Farm has been continued. New systems of drainage have been put in, cottages for the superintendent and other workers constructed, barns erected, and other improvements made; and the farm has been put in shape for the advanced experimental work it is proposed to conduct there. Extensive plantings have also been made of economic fruits, ornamental trees, and other plants. Test work with potatoes, celery, forage crops, and various fruits has been carried on. Cooperative work with other Bureaus has also been inaugurated.

COOPERATION WITH STATE EXPERIMENT STATIONS.

The Bureau of Plant Industry is now cooperating with practically all of the State experiment stations in the country. The work covers investigations of diseases of plants, studies having for their object plant improvement, investigation of forage crop conditions, encour-

agement in the production of new crops and new industries, and many other lines of work. In some special cases, notably California, close cooperation has been effected, having for its object the establishment of important testing gardens and other allied work. With the assistance of the officers of the California experiment station a testing garden has been established at Chico, Cal. The land for this garden has been donated to the experiment station, to be held in trust by the station for the use of the Bureau.

It is planned to carry on extensive work here in the matter of testing grains, fruits, and other crops specially adapted to the Pacific Coast. It is the policy of the Department in all cooperative work with the stations to fully recognize the relations of the stations to the officers who control them. Furthermore, wherever the Department desires to undertake work in a State, its policy is to endeavor to do this work in cooperation with the station.

FARM MANAGEMENT.

In order to properly conduct the work on farm management, which has already been set forth in previous reports, an office has been established for the purpose. The object of this office is to bring together in systematic shape all of the available information in the Bureau in such a way that it can be placed in the hands of the farmer for his practical use. The office gathers together information concerning farm practice in all sections of the country as a basis for further work. It secures and publishes correct records of crops grown and the manner of growing them, for the information of others who desire to follow successful plans. It encourages farmers to visit and study experiment station work, the experiment stations, and the successful farmers in their own section. It encourages diversification in farming where continuous, clean cultivation of a single crop has impoverished the soil. It outlines systems of cropping for different kinds of farming in all sections of the country, and furnishes data in the matter of properly laying out farms, fruit plantations, truck gardens, etc.

BUREAU OF FORESTRY.

PRESENT FOREST SITUATION IN THE UNITED STATES.

The present outlook as regards forestry in the United States is exceedingly hopeful. The lumber industry as a whole is now awakening to the fact that lumbering with reference to future as well as present profits may be good business and ought to be taken into account on business grounds. A growing tendency to hold cut-over lands for future crops is plainly marked among far-sighted owners of large holdings. This means that conservative management on the part of those who operate on a large scale is fairly launched. Except that

further agitation is essential to give the facts publicity, the general adoption of forestry as an established policy now depends primarily on business conditions pure and simple. The question whether or not it will pay is one to be settled in each individual case by study of conditions on the ground. Forestry can not alter economic conditions; it can only use them. Forestry is now in actual practice on large, privately owned tracts in seven different States. This is the direct result of the past work of this Department in forestry.

FIELDS FOR FUTURE WORK OF THE BUREAU.

NEED OF INVESTIGATING GENERAL FOREST PROBLEMS.

Extensive investigations of forest conditions and of methods of operation are still urgently needed before the road to practical success can be said to be generally open. The employment of foresters by large private owners to supervise operations on their own lands is being taken up. In the public interest this needs to be brought about wherever conditions are favorable, but more and more the promotion of private forestry by the Bureau of Forestry can and should be made incidental to its other functions of directing the management of public forest lands and scientifically investigating general forest problems.

In the case of small owners much remains to be done. The farmers of the country are learning how to get the most out of their land in other ways through the scientific information which the Department of Agriculture collects and diffuses. So, also, in the case of timber yield, studies which individuals can not undertake but which must be made if the wealth-producing power of the country as a whole is to be brought to its highest point, need to be prosecuted in the public interest. The average small timber-land owner is to-day in many parts of the country at a decided disadvantage in comparison with the large owner, because he lacks both working capital and equally broad knowledge of general conditions. It is true that large lumbering operations can often be made more profitable than small, but it is not in the public interest that small owners should fail to make a profit which is within their reach because they do not know how best to utilize what they have now, or do not realize what it is likely to be worth in the future. Thus the furtherance of that part of this Department's work which is directed toward informing the small owner how he can to advantage practice forestry on his own account, is of the first importance for the best use of the 200 million acres of woodlots which our country contains.

SCIENTIFIC STUDIES AND AID IN CARE OF STATE AND NATIONAL FORESTS.

By its scientific studies of American forests the Bureau of Forestry has prepared a solid basis for practical forestry. Special studies of our important timber trees have yielded information obtainable in no

other way and essential to the management of forests of which they form an important part. There is now no considerable portion of the United States for which the Bureau of Forestry has not at hand special knowledge bearing directly on questions pertaining to the use of the forests. Nevertheless, what has been done is hardly a beginning in comparison with the vastness of the field.

In the work of building up a sound permanent policy for the forests of the National domain the Department of Agriculture has continued to render important services. Much of the work of the Bureau of Forestry during the year has been the examination of lands already reserved or likely to be reserved in order to recommend the exclusion from them of such areas as are more valuable for agriculture than under forest. The personnel of the Bureau of Forestry has become practically familiar, by studies on the ground, with every phase of the question of putting to the best use the public lands of the country. Thus an efficient force has been prepared by actual experience, as well as by technical, scientific training, for the demands which a fully developed National forest policy must eventually impose.

In the light of these facts it is plain that the ultimate function of the Bureau of Forestry as a part of the Government administrative equipment is gradually defining itself. Its effort to introduce forest management among large private owners at the earliest possible moment will cease to be necessary when it becomes generally successful. It was undertaken because of an evident urgent public need. Destructive lumbering had already greatly reduced the area of productive timber lands in the United States, and its continuance was a menace to the future prosperity of the country. Because of the work of this Bureau forestry has now a recognized standing in the eyes of the American lumber trade. The Bureau of Forestry is giving a smaller proportion of its time to the preparation of working plans for large timber tracts belonging to private owners than ever before, and bearing a smaller proportion of the expense, and the progress of the past year has brought visibly nearer the time when it can withdraw practically or entirely from this field.

There will then chiefly remain work along the lines of (1) scientific study of problems which have a practical bearing on forest utilization for any purpose; (2) cooperation with States which ask advice concerning forest legislation, administration, or the formulation of a State forest policy, and (3) the discharge of whatever duties may be assigned to it in connection with the administration of the public lands by the National Government.

Along this latter line it is at present the official adviser in technical matters of the Departments which have in charge forested lands under Government control, both here and in the Philippines, and it is also

chiefly responsible for recommending changes in present reserve boundaries and for recommending the setting aside of new reserves. The policy which lies at the base of the creation of the reserves is that the public forests should not be withdrawn from use, but should be managed under such restrictions as will insure their permanent usefulness. This policy this Department is actively furthering, and no part of its work is more important.

LINES OF WORK REQUIRING EXTENSION.

An increase in the funds available for the Bureau of Forestry is essential to make it possible to push its work more rapidly. It is my purpose to provide the fullest facilities for the prompt investigation of actual or proposed forest reserves, as well as for further examinations of forested parts of the public domain not now reserved which give promise of permanent value as sources of water or wood supply. The greatest need of the West is water. In many States future settlement and prosperity depend absolutely upon its conservation. This again largely, in many cases wholly, depends on the preservation of the forests. To make possible the execution and extension of the work, I have asked for an increased appropriation for the Bureau of Forestry for the coming year.

PLANTING ON FOREST RESERVES.—The work of planting on forest reserves opens another fruitful field. In the San Gabriel Reserve in California, the Pikes Peak Reserve in Colorado, and the Dismal River Reserve in Nebraska, the planting has been begun and should be vigorously prosecuted. In the first two cases the object is to cover denuded mountain slopes with forest growth, in the interest primarily of water conservation and, in the case of the Nebraska reserve, to provide a future valuable timber supply. This planting is undertaken only after a careful preliminary survey has proved that there is an economic need for new growth which nature can not supply, and after painstaking experiment has demonstrated what methods can be depended on for success. Under these circumstances expenditure for planting is as truly economical as is that of the farmer when he purchases seed to sow that he may harvest the increase. I believe that an addition to the sum available for this work will be amply justified by the returns.

The development of economic mining will soon wait for the growth of trees within reasonable distance. The miner is an important factor in the growth of many of our States and of the country at large, and should have all facilities given him to conduct his work on the most economic basis. Where the miner ceases work the farm and factory lose a market. For this reason the miner should have the first claim on the forest for such timbers as he requires.

STUDIES IN FOREST PRODUCTS.—Auxiliary to studies of the forest itself, but of the most importance in relation to the conservative use of our forest resources, stand the studies in forest products. Among them at the present time are (1) the studies in timber preservation, especially of railroad ties, which promise such conspicuous and successful results in timber economy; (2) the experiments in timber testing, to ascertain, under such conditions as obtain in actual everyday practice, new strength determinations for use by engineers, architects, and others; and (3) the investigations of the tannin content of barks, of pulp processes, etc. In the way of securing large economies by a comparatively small outlay for investigation, no more promising field for useful work by the Bureau of Forestry is open than this.

COOPERATION WITH STATE AUTHORITIES.—The desire of State authorities for the assistance of the Bureau of Forestry in cooperative work and in framing forest legislation and their willingness to contribute to its cost are facts worth noting. State cooperative studies have now been made in Maine, New Hampshire, New York, Maryland, Michigan, Wisconsin, California, and Hawaii. Were this Department prepared to push the work along this line large results could be rapidly secured. The whole cause of forest preservation hinges on the interest of the State governments, because no matter how fully persuaded the private owner may be that forest management promises to yield him good returns, without fair assurance of safeguard against fire and of equitable taxation during the period required for a second crop to mature on cut-over lands, he can make no headway. The exclusion of fire depends on local sentiment, State legislation, and State or local police and patrol. Unless the States are awake to their duty toward this form of property the Federal Government can do little beyond caring for its own holdings. In California one result of the cooperative work now going on is the drafting of what appears to be the best forest-fire law yet drawn up in this country. The way is now open for a great advance through State cooperation if the requisite means of meeting its cost beyond the State contributions can be made available.

SUCCESS OF FORESTRY WORK.

The successive advances which have been made by Congress of recent years in the appropriation for the Bureau of Forestry offer one of the best evidences of the commendation which its work has received. More and more money has been given to it to spend because it has proved year by year its capacity to do more, and more practical, good work. It prosecutes its researches solely that it may discover and diffuse information which contributes to our National well-being. Within six years its force has increased sixteenfold and its expendi-

ture twelvefold; but neither of these facts is an adequate measure of its advance in practical efficiency or of its success in changing former conditions. By a single discovery—that the cup and gutter system, devised by one of its agents, could be commercially applied to the production of crude turpentine—it is now saving many times more annually to the naval-stores industry than the total expenditures of the Bureau during the whole six years.

It has changed forestry for business returns in the United States from an undemonstrated and doubtful theory into a well-established business operation; it has converted the lumber industry of the country from an attitude of well-grounded suspicion to one of support; it has converted the general public from indifference to what seemed an impractical outcry to an intelligent comprehension of what forestry has to offer. By bringing home to the railroads the need of economic utilization, preservative treatment, and provision for future supplies it has set on foot a movement of incalculable importance. By teaching Western farmers how to plant and grow trees for farm protection and local timber supplies it has added materially to the comfort and prosperity of vast regions and many States. More important still, by demonstrating the capacity of the forest to store water, and by energetic activity to guard from sale or destruction forests of important protective power, it has contributed to the success of National irrigation, one of the most vital developments of recent years.

NEED OF FURTHER DEVELOPMENT OF FORESTRY.

But though this Bureau has accomplished and is accomplishing practical results out of all proportion to its money expenditure, this is not exceptional in the Department of Agriculture, and forms in itself no justification for a further increase. The question is simply in each case whether the country will be better off by spending the money or by not spending it. There are, however, certain special reasons why the Bureau of Forestry should have made, and should for some time continue to make, an exceptionally rapid growth. Its task is virtually that of building up a new science in this country, combined with that of getting its discoveries recognized and applied by a public once little alive to their value. No other branch of agricultural science has recently been in such need of development, and in the whole history of agricultural progress I believe that no other similar development was ever more timely. This development took place because of the unparalleled National need created by the vastness of the interest involved and the critical point which forest destruction had reached. And there is still much to be done before this new science can overtake the nation's requirements.

WORK ACCOMPLISHED DURING THE YEAR.

COOPERATIVE STATE FOREST STUDIES.

Forest studies in cooperation with State or Territorial governments were carried on during the year in New Hampshire, Maryland, Wisconsin, California, and Hawaii. A report on the work in New Hampshire is now in the hands of the printer. It contains a thorough study of the main forest resources of the State, and will afford a satisfactory basis for the adoption of a broad and far-sighted State forest policy.

The study in Hawaii resulted in the publication of a bulletin on "The Forests of the Hawaiian Islands," in the adoption by the Territorial government of its recommendations, and the appointment of a member of the Bureau of Forestry as superintendent of forestry in the islands.

A map and report embodying results of the work in Maryland will appear in the annual report of the State geologist.

In California over 20,000,000 acres of forest were mapped and described; the growth of planted eucalypts was studied; important investigations of the effects of chaparral cover on water conservation and on the forest, and of the forest replacement on denuded areas, were prosecuted; and the study of forest fires was continued, with the result that what is believed to be the best fire law ever prepared for State enactment has been drafted for presentation to the legislature.

FOREST MEASUREMENTS.

Of forest measurements there were handled during the last fiscal year the results of over 24,000 acres of valuation surveys, over 33,000 analyses of trees, 16,000 height measurements, and 2,300 taper measurements. The volume of this work does not, however, measure its importance. In computing, compiling, and digesting the mass of information supplied by the field studies of the Bureau the accumulation of details would count for little if the results were worked up by purely routine or mechanical methods. The task imposed is to create a body of scientific knowledge by developing to significant conclusions the raw material turned in—a task calling first of all for intelligence and insight. The result is real advance in accurate knowledge of forest conditions and increasing ability to direct practical operations. Both in the preparation of working plans and in the special studies of commercial trees and forest problems which have been made during the year the efficiency of the work included under forest measurements has been demonstrated.

FOREST MANAGEMENT.

The work of the Bureau under the act of Congress of June 27, 1902, known as the Morris bill, has proved that conservative lumbering under practical regulations pays in the white-pine region of northern

Minnesota. In point of fact a higher price was obtained for the timber sold under that act, to be cut and removed under rules prescribed by the Forester, than similar adjacent timber brought shortly before, when sold without such restrictions. On about one-fourth of the 200,000 acres to be lumbered the 5 per cent of timber to be left standing had been selected and marked at the end of the fiscal year.

During the year applications for assistance in introducing forest management on private holdings were received from 47 owners of large tracts, covering nearly 4,000,000 acres, and from 89 owners of woodlots with a total area of about 6,600 acres. The field work for eight working plans for large tracts, covering about 1,000,000 acres, was completed, and for 68 woodlots of nearly 19,000 acres total area.

The eight working plans for large tracts were studies of typical problems in five widely separated States. In Minnesota a tract of land formerly covered mainly with white and Norway pine, a large part of which has been lumbered and is now entirely unproductive, presented a characteristic example of much of the remaining forest land of the lake region. The plan of management devised provides for reproduction from seed trees and for fire protection. In Alabama a working plan was prepared for two forests of virgin longleaf pine, owned by one company, which wished to be assured of a continuous mill supply. In Texas another longleaf-pine study completed during the year furnished the material for estimating present and future yields of longleaf and at the same time demonstrated the wastefulness of some of the lumbering methods now commonly followed.

In West Virginia a tract covered with hardwood, hemlock, and spruce forest, much of which is in poor condition, was studied to ascertain the practicability of management. In New Hampshire three working plans were prepared: one for a tract where the requirement was primarily the improvement of a forest-park property; the second for the tract of a manufacturing company wishing to secure a steady supply of box boards and increase the productiveness of the forest; and the third for a White Mountain tract, where the chief requirement was a system of fire protection.

Commercial tree studies of the year included balsam fir, paper birch, poplar, loblolly pine, and red gum.

DENDROLOGY.

Reports which mark the conclusion of the field studies of Missouri swamp forests and Ohio hardwood forests, and of the laboratory studies of gums, resins, tan barks, and pulp-wood fibers conducted in cooperation with the Bureau of Chemistry, were completed during the year. Field work was completed in the studies of California big trees and bristlecone fir, and of turpentine orcharding and laboratory work in a cooperative investigation of turpentine adulterants. A descriptive study of the forests of Suffolk and Nassau counties, Long Island,

was begun and finished; investigations of Pacific coast tan-bark trees and of basket-willow culture were continued; and an investigation of methods of turpentine distillation, with special reference to improving commercial processes of production in this country, was begun. Experiments bearing on the culture of the sugar maple were made to supplement a study of the sugar-maple industry previously completed. The collection of forest photographs received notable additions by exchange with foreign countries, and by gifts as well as by the normal increase from the new photographs obtained by the Bureau of Forestry in connection with its field work.

FOREST EXTENSION, FOREST FIRES, AND SPECIAL STUDIES.

In the work of cooperation with private owners to promote forest planting the Bureau of Forestry prepared during the year 42 planting plans for an aggregate of over 2,800 acres. Altogether 334 planting plans have been made for land in 52 States and Territories. This is a work of high utility, particularly in those regions of the West where timber and water are scarce and farm protection against hot or cold winds is important. Cooperation is confined to the giving of expert advice; all the expense of the planting is borne by the owner. By the adoption of a system of regional studies rapid progress is being made toward a point at which this expert advice can ordinarily be given by correspondence. When this point is reached, the Bureau of Forestry will be in a position to contribute materially to the well-being of wide regions at almost no expense.

In forest-reserve planting extensive operations are now under way in Nebraska, where previous experiments have pointed out how planting on a large scale can be made successful. In the spring of 1904 there were taken from the nursery and planted in the Dismal River Reserve 300,000 seedlings, of which over 90 per cent survived. Highly efficient and economical methods of doing this work were devised. Preliminary preparations for planting were made in the Niobrara Reserve, Nebraska, the San Gabriel Reserve, California, and the Pikes Peak Reserve, Colorado.

Studies of natural forest replacement were conducted in Colorado, western Kansas, western Nebraska, northern New Mexico, and New England.

The investigation of forest fires, with especial reference to methods of preventing and controlling them, has been continued, and encouraging progress made. The study of the reclamation of shifting sand through forest growth was continued.

TIMBER PRESERVATION, STRENGTH, AND MECHANICAL PROPERTIES.

The studies in timber preservation conducted by the Bureau of Forestry are yielding results of large economic importance. Extensive experiments were conducted during the year in the West with

longleaf, shortleaf, loblolly, lodgepole, and western yellow pine, spruce, and white and red fir ties. Ties were employed for these tests partly because of the opportunities for experiments of general application afforded by the selection of this form of timber, and partly because of the intrinsic importance of the specific subject of tie preservation. These experiments have already developed a number of important facts connected with timber seasoning and preservation.

In the Central States similar experiments were made with a large number of hardwood timbers, especially with those possibly capable of filling the place for certain uses of white oak and hickory, the supply of which is dwindling fast. It was found that chemical treatment will permit their use for structural purposes; that conspicuous improvement in present methods of seasoning is possible; and that the effectiveness of preservative treatment of red oak is greatly increased by thorough seasoning both before and after treatment.

In the East the seasoning of and application of preservatives to telegraph and telephone poles and cross arms were investigated, and discoveries which render possible considerable economies were made. Further experiments to reduce the rate of decay of poles at the butt are under way. Seasoning experiments are in progress with Adirondack hardwoods.

The investigation of the strength of timbers directly meets the needs of engineers, architects, and others who have to do with the use of construction timber, and is likely to be followed by a revision of specification requirements and grading rules. Large timbers in market forms and sizes, of red fir, western hemlock, and loblolly and longleaf pine were tested. Eastern investigations of many species are needed in the interest of the most economical use of our timber supply; for it is undoubtedly true that timber trees neglected hitherto will be found to possess unsuspected value.

Other important lines of investigation pursued were a study of the mechanical properties of red gum, which established, among other things, its suitability for carriage manufacture; studies of the relative strength of various forms of tie fastenings and of devices to prevent the rapid wear of soft timbers protected against decay by preservative treatment; and a study of the effect of moisture content on the strength of timber.

LOUISIANA PURCHASE EXPOSITION FOREST EXHIBIT.

The most extensive and complete forest exhibit ever made by this Bureau was installed at the Exposition at St. Louis. It included the execution out of doors of tree-planting plans and the setting of trees adapted to every part of the country, and an exhibit of the best forest nursery methods. A full exhibit by transparencies, pictures, and apparatus illustrated every phase of our forestry work and forest con-

ditions in all parts of the country. Methods of testing commercial timber were illustrated, and an experimental plant for wood preservation was established and operated during the Fair.

BUREAU OF CHEMISTRY.

The Bureau of Chemistry, during the last few years, has expanded the sphere of its activity in many directions.

AID TO OTHER DEPARTMENTS.

First to be noticed of this expansion is the work done under that authorization by Congress which secures the services of this Bureau for the other Departments of the Government. Under this authority the amount of work which has been done for the other Departments has rapidly increased. This is especially true of chemical determinations in collaboration with the Treasury Department.

For the Department of Justice extensive investigations have been undertaken to determine the injuries suffered by forest reserves from the fumes of smelters. For this Department, also, numerous chemical investigations have been made in connection with cases arising in the administration of justice in the Indian reservations and in certain cases of poisoning which have occurred within those reservations.

For the Post-Office Department extensive examinations have been made of stamping pads and the inks used therewith; also of alleged remedies offered by advertisements through the mails and regarded by the postal authorities as fraudulent in their nature.

For the various Departments a large number of analyses have been made of articles offered under contract to determine whether these articles are of the quality and purity specified in the contracts.

FOOD INSPECTION.

The second important item in the expansion of the work of the Bureau of Chemistry has been the establishment of inspection for imported food products. Attention is invited to the fact that under this law the character of food products imported to this country has been greatly improved.

In former years the United States was regarded as the dumping ground for the refuse teas of the commerce of the world. Many years ago, in order to overcome this evil, a system of inspection of imported teas was established and has since been maintained. Under the beneficent working of this system Americans are now certain of being able to purchase pure and wholesome tea, since it is almost impossible for spurious and adulterated teas to find their way into this country. Congress has now extended this system of inspection to all foods, beverages, and condiments imported into the United States. There

is every reason to believe that when this system is thoroughly established an improved condition comparable to that which has taken place in teas may be anticipated.

FOOD STANDARDS.

Another important advance which deserves special attention is that relating to standards of purity for food products. The Secretary of Agriculture has been authorized by Congress to fix standards, and in order that they may be just and reasonable he has been authorized to call to his assistance the experts of the Association of Official Agricultural Chemists and other experts, as he may see fit, to advise him in regard to such matters. The work of ascertaining these proper standards, in collaboration with the Association of Official Agricultural Chemists, has been committed to the Bureau of Chemistry. Already considerable progress has been made along this desirable line of investigation and a number of standards of food products have already been fixed by proclamation. It is proposed to extend this useful work until practically all the substances used by our citizens as foods, beverages, and condiments shall have a fixed standard of purity to which all manufacturers may attain by proper care in the preparation of products of this kind.

EXPERIMENTS WITH BORAX IN FOOD.

The work of the Bureau of Chemistry in the study of the effect upon digestion and health exerted by preservatives, coloring matter, and other substances added to food has been continued in the same painstaking and thorough manner as in the preceding year. The great quantity of data secured in this work in relation to the effect of borax has been compiled and is now being published. These studies of the effect of borax have led to certain definite conclusions which are of the utmost interest to manufacturers of food products into which borax has often been introduced, and to the consuming public.

The effects of the preservatives upon the functions of the body have been studied in detail. It is admitted that there is a necessity for mineral substances in the blood, as they are essential to the functional activity of the various organs of the body, irrespective of any part they may take in direct nutrition. The necessity, for example, of saline solutions in the blood is known to every physiologist, but it is evident that these saline solutions can be derived from materials of common occurrence and naturally found in food products, or usually added thereto as condiments, such as common salt.

At the same time it must not be forgotten that this does not excuse the introduction of other soluble bodies which have a detrimental effect upon the functional activities, and the excretion of which imposes an additional burden upon the excretory organs. For although such

substances might not impair the efficiency of these organs for a number of years, they would finally produce a condition of exhaustion which would be followed by serious consequences.

USE OF SMALL QUANTITIES AS PRESERVATIVE.

The argument that small quantities of deleterious substances may be used without harm is not logical, nor can it be based upon the result of the experiments which have been made. On the other hand, the logical conclusion which seems to follow from the data at our disposal is that the use of boric acid and equivalent amounts of borax should be restricted to those cases where the necessity therefor is clearly manifest, and where it is demonstrable that other methods of food preservation are not applicable, and that without the use of such a preservative the deleterious effects produced by the foods themselves by reason of decomposition would be far greater than could possibly come from the use of the preservative in minimum quantities. In these cases it would also follow, apparently as a matter of public information, and especially for the protection of the young, sick, and debilitated, that each article of food should be plainly labeled and branded, so as to show the character and quantity of the preservative employed.

EFFECT UPON HEALTH OF VARYING AMOUNTS OF BORAX.

The most interesting of the observations which were made during the progress of the experiments was in the study of the direct effect upon health of boric acid and borax when administered in food. When boric acid or its equivalent in borax is taken with the food in small quantities, not exceeding half a gram (7½ grains) a day, no notable effects are immediately produced. The medical symptoms of the cases in long-continued exhibitions of small doses, or in large doses extending over a shorter period, show in many instances a manifest tendency to diminish the appetite and to produce a feeling of fullness and uneasiness in the stomach, which in some cases results in nausea, with a very general tendency to produce a sense of fullness in the head, which is often manifested as a dull and persistent headache. In addition to the uneasiness produced in the region of the stomach, there appear in some instances sharp and well-located pains which, however, are not persistent. Although the depression in the weight of the body and some of the other symptoms produced persist in the after periods, there is a uniform tendency manifested after the withdrawal of the preservative toward a recovery from the unpleasant sensations in the stomach and head above mentioned.

The administration of boric acid to the amount of 4 or 5 grams per day, or borax equivalent thereto, continued for some time, results in most cases in loss of appetite and inability to perform work of any kind. In many cases the person becomes ill and unfit for duty. The

administration of 3 grams per day produced in many cases the same symptoms, although it appeared that a majority of the men under observation were able to take 3 grams a day for a somewhat protracted period and still perform their duties. They commonly felt injurious effects from the dose, however, and it is certain that the normal man could not long continue to receive 3 grams per day.

In many cases the same results, though less marked, follow the administration of borax to the extent of 2 grams and even of 1 gram per day, although in some of the cases studied the illness following the administration of borax and boric acid in those proportions may be explained by other causes, chiefly la grippe.

The administration of borax and boric acid to the extent of one-half gram per day yielded results markedly different from those obtained with larger quantities of the preservatives. This experiment, conducted as it was for a period of fifty days, was a rather severe test, and it appeared that in some instances a somewhat unfavorable result attended its use. On the whole the results show that one-half gram per day is too much for the normal man to receive regularly. On the other hand, it is evident that the normal man can receive one-half gram per day of boric acid, or of borax expressed in terms of boric acid, for a limited period of time without much danger of impairment of health.

It is, of course, not to be denied that both borax and boric acid are recognized as valuable remedies in medicine. There are certain diseases in which these remedies are regularly prescribed, both for internal and external use. The value which they possess in these cases does not seem to have any relation to their use in the healthy organism except when properly prescribed as prophylactics. The fact that any remedy is useful in disease does not appear to logically warrant its use at any other time.

It appears, therefore, that both boric acid and borax, when continuously administered in small doses for a long period or when given in large quantities for a short period, create disturbances of appetite, of digestion, and of health.

TESTING OF ROAD MATERIALS.

The work of the Road Material Laboratory, now the Division of Tests, has been much broadened and its value and importance increased during the past fiscal year. The routine tests on road materials are carried on as usual, and several of the tests have been improved and standardized. The importance of testing rocks to be used in road building is being recognized at the present time by the leading highway engineers of the country, and a number of laboratories modeled after the Department Road Material Laboratory have been established in different places.

STUDY OF CLAYS FOR ROAD MAKING.

Of the 228 samples of road materials reported for the past year, 35 were clays. This is mentioned to show the high percentage which clay bears to the whole number of samples received; for it is a fact not generally recognized that in vast areas throughout the country clay is the only material of which roads can be built. For this reason much time has been spent in studying the physical properties of clays in the endeavor to devise methods by which they can be utilized in road making. It may be mentioned here that up to the present time but one method of using clay in road building has been known—that is, to mix it in the proper proportion with sand. This method, however, is not always practicable, for in many districts sand is difficult to obtain. Many of the Western railroads running through areas of the country where rock ballast was impossible to obtain have been in the habit of burning or clinkering clay with open wood and coal-slack fires along the line of their roads. This clinkered clay has been successfully used for some time past as a railroad ballast.

Many inquiries had been received as to methods of treating roads in some of the Western and Southwestern States, where, owing to absolute lack of hard materials and to the extremely sticky nature of the country clays, many of the farmers were absolutely cut off from the towns during the wet portions of the year. It was apparent that if the local clays could be cheaply burnt to a hard, dense clinker a good road material could be provided. Preliminary to actual work on a large scale and expensive experiments on the ground, it was necessary to make laboratory tests of the clays to see whether they would burn to a dense, hard clinker. Samples of the well-known so-called gumbo clay were sent to the laboratory from the Yazoo district of Mississippi. These samples were experimentally burned in the laboratory of the Division, and it seemed quite possible to use the clays in the manner as indicated above.

Following upon this experiment, the Office of Public Road Inquiries built an experimental road in Yazoo City which has been reported successful. It is needless to point out the great importance of the success of such experiments in relation to road building in localities in which no rock is to be had.

USES AND SUPPLIES OF CLAY.

Since it is shown by many letters of inquiry that information is being sought by people all over the country on the subject of testing of clays for the various purposes for which they are used, other than road building, special tests are now carried on to that end. A furnace has been installed and actual burning tests on clays are now made. In order to further stimulate interest in the development of native clay

bodies, a special circular was issued on "The useful properties of clays." The aim of this circular was to give information in the simplest possible way to people who were not supposed to possess technical knowledge of clays. That the object has been attained is shown by the increased correspondence of the Division on this subject. The circular particularly points out that for the year 1902, the last year for which the official figures are available, the total imports of foreign clays to this country were valued at $1,154,805, while the domestic clays produced were valued at $2,061,072. Since the country possesses unusually fine clay bodies, a great many of which up to the present time await development, any stimulation of interest among the people to develop our native clays must be of great value.

CEMENTING POWER OF ROAD MATERIAL.

The satisfactory investigation of the important property of binding or cementing of road materials when used upon roads has been continued and much new evidence has been obtained.

Under the old rule-of-thumb methods of road building one sort of rock was supposed to be as good as another. Miles and miles of expensive roads have been built in a haphazard way, of any sort of material that was available, and many of such roads have "raveled" and gone to pieces almost as rapidly as they could be built. Since the establishment of the proper methods of testing and investigating these materials, there has been noticed a great improvement of roads. The most intelligent and progressive of the State highway engineers are availing themselves of the opportunities extended to them by the Department of Agriculture for studying and familiarizing themselves with the physical properties of the materials which they are about to use before risking the public moneys in expensive work.

The hardness and toughness of a rock which is going to be used on a road are, as everyone knows, important properties, but the property which causes this rock under the influence of traffic to bind or cement together so as to form a smooth, even, impervious shell on the surface of a road is even more important. When the work of the Road Material Laboratory first began the importance of this quality had hardly been recognized, and absolutely nothing was known as to the reason why one rock should possess this property to a very high degree and another of perhaps identically the same name and species should be entirely lacking in it. The closest investigation has been given to this subject and to the collection of all possible data and information, not only from the theoretical and laboratory standpoint, but also from a practical point of view. It is safe to say that its satisfactory solution has been accomplished. A bulletin on "The Cementing Value of Road Materials" has just been published, and the publication of more work in the same line will follow shortly.

A new test for determining the toughness of rock and asphalt mixtures for road building was brought out during the past year, and several new tests are at present being developed.

CONCRETE FOR FENCE POSTS, ROOFS, ETC.

On the 1st of last July the Road Material Laboratory was made a Division, and its name changed to the Division of Tests. The object of this change was to establish in the Department a laboratory where all materials of construction relating to agriculture could be tested and allied problems investigated. In pursuance of this change, several lines of research have been taken up. The first problem selected was to determine whether or not a thoroughly practical concrete fence post reenforced with steel could be made sufficiently cheap to be used by farmers. The advantages of such fence posts would be many. The price of wood, particularly of the varieties used for fence posts, is continually rising, and even now the price is almost prohibitory in some sections of the country. Further, a properly constructed concrete fence post would be permanent, as it would neither rot nor undergo disintegration. A variety of methods of reenforcement have already been tried, and the experiments are being pushed as rapidly as possible. The results so far obtained have been most satisfactory.

Experiments of a similar nature to the above are about to be begun on methods for making concrete drains, watering troughs, roofs, and barns, with the hope that concrete construction, so rapidly developing in the large cities, can be applied with benefit to the farm.

The question of the structure and constitution of hydraulic cements is a matter of the very greatest importance. The Division of Tests has in preparation a paper which I have good reason to believe will be accepted as the solution of this much-discussed question.

USE OF OIL ON ROADS.

Much interest has been felt in different parts of the country in the use of oil for treating the surfaces of highways, in order to lay the dust and to offer a hard, impervious, waterproof surface. It is well known that in California such treatment of roads has met with a high degree of success. Similar experiments, however, when carried out in the East, proved complete failures; the Eastern oil failed to bind on the surface of the road, and did not lead to the desired result. When it was found that the main difference between the California natural oils and the Eastern and Texas oils lay in the fact that the California oils contained an asphalt base, while the Eastern oils contained a petroleum or vaseline base, the Division of Tests immediately suggested that the cause of the failure of previous Eastern experiments was directly due to this fact, and road builders throughout the country

were urged to make experiments with mixtures of crude oils with crude asphaltum. Last summer the Commissioners of the District of Columbia consented to make such an experiment. A street in Washington was selected for the purpose and a number of mixtures of Southern crude oil and asphaltum were spread in adjacent sections. At first the experiment was looked upon as a failure, but the road has been steadily improving, and at present there is every promise of the experiment proving a success. If it proves true that mixtures of Eastern crude oil and asphaltum make as good roads as the California oils do, a very great advance will be made toward the betterment of our rural highways.

SCHOOL FOR ROAD BUILDING.

One of the chief lines of work for this division during the present year is the establishment of a school of road building. The object of this school is to give a one-year course in highway engineering and the testing of road materials to about four young men who have received degrees from reputable engineering schools. These students are to be selected by a civil-service examination. They will devote six months to the study of road-building problems and road materials and six months to field work, which will consist of actual road construction. Men with such training are sure to be of the greatest service to the country, not only in constructing highways, but in disseminating accurate knowledge on highway construction.

BUREAU OF SOILS.

The study of soils and their management with regard to their values for producing crops has been continued. The composition of soils varies greatly in different localities and in quite limited areas. Our soils were nearly all fertile originally, but continued cultivation has in many cases reduced their powers to grow crops as they did when first brought under the plow. The best methods of restoring soils that have been cultivated too long is a pressing question not only in the older settled States, but is insistent in most of the newer lands of the West where wheat has been grown until profitable crops of it are no longer to be had.

Rotation of crops and laying down in pastures to be grazed until the soil fills with roots is the well-known restorative, but soils vary greatly in our several States and are adapted to the growth of special crops in our several latitudes, so that a general knowledge of their composition is of prime importance before the tiller can put them to their most profitable uses. Droughts limit the yield on soils that have lost their organic matter through continued cultivation without an adequate return of fertilizers in the shape of decaying vegetation. Commercial

manures will not adequately remedy the evil, as they do not return to the soil what enables it to retain moisture Soils vary so much in this regard, from coarse sand to retentive clay, that each requires careful study to enable the farmer to manage it to the greatest advantage.

The Bureau of Soils is mapping our various areas to the end that the residents on each may as soon as possible learn the peculiarities with which they have to deal. This work is comparatively new. Its value has been overlooked by the educator. A force of soil experts is being trained in the Department to help the cultivator to a better knowledge of the possibilities of his acres throughout our broad land, in order that run-down lands may be reclaimed and that the fertility of our newer lands may be maintained to meet the requirements of a rapidly increasing population.

We are bringing plants from all foreign countries to diversify our industries and enable our husbandmen to grow what has been and still is costing us large amounts of money. A knowledge of the character of the soils from which they come and on which they have been developed is imperative, and suggests to us the wisdom of becoming familiar with the soils as well as the climates to which we introduce them, if we are to maintain them here in their excellence or improve them, giving them better conditions than they had in the countries where we found them. Within the limits of our climates and soils we hope to improve everything we import through a superior aggregation of scientists who are making research into all the conditions of plant life, the soil being of greatest importance.

PROGRESS OF THE SOIL SURVEY.

The area surveyed and mapped during the fiscal year was 29,058 square miles, or 18,597,120 acres. The area surveyed during the preceding fiscal year was 23,293 square miles, which, together with the work done prior to that time, makes a total area surveyed up to that date of 74,795 square miles, or 47,868,800 acres.

The work was carried on during the past year in 68 areas in 33 States. On an average 20 parties have been working continuously throughout the year, in the Southern States during the fall and winter and in the Northern States during the spring and summer months.

The areas surveyed and the cost of the work in each area are shown in the following table:

Areas surveyed and mapped during fiscal year ended June 30, 1904, and the areas previously reported.

State or Territory.	Work during 1904.	Work previously reported.	Total area surveyed.	
	Sq. miles.	*Sq. miles.*	*Sq. miles.*	*Acres.*
Alabama	2,396	1,223	3,619	2,316,160
Arizona	.....	611	611	391,040
Arkansas	626	251	877	561,280
California	1,679	3,921	5,600	3,584,000
Colorado	228	1,345	1,573	1,006,720
Connecticut	.....	518	518	331,520
Delaware	314	.....	314	200,960
Florida	485	548	1,033	661,120
Georgia	853	757	1,610	1,030,400
Idaho	58	1,077	1,135	726,400
Illinois	2,333	3,592	5,925	3,792,000
Indiana	889	387	1,276	816,640
Iowa	1,287	1,016	2,303	1,473,920
Kansas	999	464	1,463	936,320
Kentucky	.....	837	837	535,680
Louisiana	1,446	942	2,388	1,528,320
Maryland	29	2,634	2,663	1,704,320
Massachusetts	386	410	796	509,440
Michigan	517	858	1,375	880,000
Minnesota	.....	233	233	149,120
Mississippi	1,352	1,317	2,669	1,708,160
Missouri	1,111	919	2,030	1,299,200
Montana	.....	107	107	68,480
Nebraska	1,195	.....	1,195	764,800
New Jersey	.....	1,303	1,303	833,920
New Mexico	.....	129	129	82,560
New York	986	1,558	2,544	1,628,160
North Carolina	687	4,646	5,333	3,413,120
North Dakota	386	856	1,242	794,880
Ohio	1,400	1,355	2,755	1,763,200
Oregon	60	386	446	285,440
Pennsylvania	.....	1,204	1,204	770,560
Porto Rico	.....	330	330	211,200
Rhode Island	500	.....	500	320,000
South Carolina	1,159	2,032	3,191	2,042,240
South Dakota	.....	485	485	310,400
Tennessee	1,596	547	2,143	1,371,520
Texas	2,564	1,733	4,297	2,750,080
Utah	306	994	1,300	832,000
Vermont	227	.....	227	145,280
Virginia	656	2,747	3,403	2,177,920
Washington	.....	510	510	326,400
West Virginia	39	.....	39	24,960
Wisconsin	.....	955	955	611,200
Wyoming	309	.....	309	197,760
Total	29,058	45,737	74,795	47,868,800

RECAPITULATION.

Cost of field work	$64,238.36
Supplies	1,464.18
Traveling expenses between areas	4,115.55
Other expenses	2,783.32
Total cost of soil survey	72,601.41

Paid by State organizations	$2,377.57
Paid by Department of Agriculture	70,223.84
Area surveyed ..... square miles	29,058
Cost of work in field per square mile	$2.21
Transportation, supplies, and other expenses, per square mile	.29
Average total cost per square mile	2.50
Average cost to Department of Agriculture per square mile	2.42

The cost of the work in the field has increased from $2.19 per square mile, reported last year, to $2.21 per square mile during the year just closed; while the average cost of the work to the Department of Agriculture, including all transportation, supplies, and office expenses, has decreased from $2.63 per square mile, reported last year, to $2.42 per square mile during the year just ended.

There has been a continued demand for this soil-survey work, and there are on file demands for about two years' work yet unfilled, while requests continue to come in which can not be immediately considered.

There has been a steady demand from colleges, experiment stations, and private enterprises for men trained in this soil-survey work, and during the past year several men have left this Bureau to accept more lucrative positions elsewhere.

PUBLICATION OF THE REPORTS AND MAPS.

At the last session of Congress provision was made to print in the form of "advance sheets" the several reports as they are prepared—500 copies for the use of each Senator from the State, 2,000 copies for the use of each Representative of the Congressional district or districts in which the survey is made, and 1,000 copies for the use of the Department of Agriculture. Although this act was passed too late to materially influence the printing of the report of the work for the field season of 1903, it will very greatly facilitate the distribution of the report and is proving a very advantageous way for the printing and distribution of the report of the work for the field season of 1904, the manuscript of the first reports of which have already gone to the Public Printer.

ALKALI-LAND RECLAMATION.

In my last report attention was directed to the important results obtained in the reclamation of alkali soils by underdrainage and surface flooding. This work was undertaken as an object lesson to farmers in those irrigated districts of the West where any considerable trouble had been experienced with the rise of alkali and the consequent depreciation in the value of the land. The results of the past year have again proved the wisdom of inaugurating these demonstration experiments in alkali reclamation. Great interest in the work has been aroused on every side, and frequent inquiries have been received from farmers owning alkali land asking instructions as to the best methods to prevent the further deterioration of their lands and advice as to the reclamation of tracts now partly or wholly unproductive.

PROGRESS IN UTAH AND CALIFORNIA.

On the reclamation tracts established during 1902–3 much progress has been made during the past year, and indications point to the complete reclamation of the lands under experimentation at an early date. On the 40-acre Swan tract, near Salt Lake City, the results have been especially gratifying. At the inception of the work there, in September, 1902, a detailed soil survey showed the first 4 feet of soil over the 40 acres to contain more than 6,650 tons of soluble salts (alkali). In May, 1903, there had been removed in the drainage water, by actual measurement, nearly 50 per cent of this immense total, and in the October following the proportion removed had reached 82 per cent, thus leaving only 1,221 tons of the original 6,650 tons still in the 4-foot section of the entire tract. The greater part of the salt originally in the surface foot had been removed, while even the fourth foot had lost 69 per cent of the alkali originally present.

In the spring of 1904 this tract was sowed to oats, barley, and wheat, as it was believed to be sufficiently sweetened for shallow-rooted crops. The land was not in the best condition for seeding. Nevertheless, on many of the checks 90 per cent of a stand was secured, and on all checks but little evidence of alkali was observed. The flooding process was resumed on those checks having the poorest crop prospects, and will be continued on all the tract after harvest, and by next spring it is expected that reclamation will have progressed to such an extent that the deep-rooted alfalfa can be grown, when the land will be returned to the owner. The growing of the crops of the present year and the seeding of the land to alfalfa are under the control of the Utah experiment station in cooperation with the Department.

The progress of a similar work on a 20-acre tract at Fresno, Cal., has been no less gratifying than that at Salt Lake City. The problem here as regards the drainage was more difficult, as the water had to be removed by pumping, while the soil was fine and silty and clogged the drain pipes. These difficulties have been surmounted, however, and within a year it has been possible to grow crops of alfalfa and wheat on a considerable part of the 20 acres under experiment. The Fresno work I deem particularly important, as it is situated in a wealthy district, where large areas of once productive land have been abandoned because of the rise of alkali and the swamping of areas by seepage water from the excessive irrigation of higher lying lands and from the canals.

EXPERIMENTS IN WASHINGTON, ARIZONA, AND MONTANA.

In the Gervais tract, situated 3 miles from North Yakima, Wash., it is estimated that flooding from July to November, 1903, washed approximately 70 per cent of the total salts out of the soil to a depth of 4 feet. Here, as in the Fresno area, much valuable land has been

ruined by seepage water and the rise of black alkali. Flooding of this tract was resumed in 1904, and it is expected that reclamation will have progressed to such an extent that crops can be grown in the coming season.

A more recent experiment has been instituted at Tempe, Ariz., where the installation of the drains was completed in February, 1904. An unprecedentedly dry season and a consequent lack of water have prevented much progress in the work at this point.

Another tract has been taken up for reclamation work near Billings, Mont. This tract is situated in the Yellowstone River Valley, where great progress has been made in growing alfalfa as a winter feed for the cattle and sheep that pasture on the adjoining mountain ranges during the summer. Shortly after irrigation began in this district alkali began to appear and the ground water rose rapidly, waterlogging wide areas of the land to such an extent that its cultivation had to be discontinued. An examination of certain parts of the valley, made by the Bureau of Soils in 1897 and 1898, showed the extent of the damage, and when, in 1902, a detailed soil survey was made around Billings it was found the trouble had greatly increased and intensified. Even in the two years that have elapsed since the survey was made, many fine alfalfa fields have been abandoned and now are heavily incrusted alkali flats. The farmers here are fully alive to the seriousness of the situation, but seem unable to cope with the problem.

SUCCESS OF THE WORK.

Many tracts of land were offered the Department for the purpose of experiment, and a number of farmers have indicated their intention to undertake similar work themselves, showing the interest taken in the work. This, however, has not proceeded far enough to permit a full report at this time. I have, however, the fullest confidence in the final success of the undertaking, as well as a firm belief that it will lead to individual or concerted action on the part of those of our citizens most interested, with the result that both the agricultural and stock-raising interests of this part of the country will be greatly benefited.

It seems, then, that within three years, at most, practically worthless land, so heavily charged with injurious salts as to be unfit for any form of agriculture, may be reclaimed to grow any ordinary field crop; that the method of doing this is simple; and that the expense involved is such that the work may in many instances be economically undertaken by individual, corporate, or State initiative. Taking the Utah tract for example, the land reclaimed has increased from a purely nominal value to an actual value, judged by the value of surrounding unaffected lands, of $250 to $300 an acre. The total expense of reclamation, taking everything into consideration, is but a small fraction of this enhanced value.

TOBACCO INVESTIGATIONS.

In the line of tobacco investigations carried on by the Bureau of Soils the most important work during the past fiscal year has been the experimental growing of Cuban seed tobacco on certain soils in Texas, Alabama, and South Carolina. This work was begun in July, 1903, in cooperation with leading farmers in the several States. Thirteen acres were planted in Texas, 3 in Alabama, and 3 in South Carolina. The success of this first trial led to further plantings by the Department in 1904, when trial tracts were established at Nacogdoches, Crockett, and Giddings, in Texas, a total of 12 acres being planted. One tract in Perry County, Ala., and one in Orange County, S. C., were established, each with 3 acres in tobacco. Samples of the tobaccos grown in 1903 were submitted to the trade, and the opinion is that the Texas leaf has considerable merit, both in regard to flavor and aroma, and some have pronounced it to be superior to any filler yet grown in this country. The Alabama filler leaf is considered fair, but not equal to the Texas leaf, while the filler grown in South Carolina does not meet with as much favor as that grown in the two States already mentioned.

The commercial value placed upon this leaf by different tobacco brokers varies considerably, ranging from 18 to 40 cents a pound.

Some bales of Texas leaf have been disposed of at the higher figure. Final judgment of the success of this venture must be postponed until further advices are received from the dealers and manufacturers to whom working samples have been submitted.

GROWING AND CURING CIGAR TOBACCOS IN OHIO.

Experiments in growing the Cuban type of filler have also been carried on on a 10-acre tract in Ohio. Owing to the heavy nature of the leaf it is impossible to judge of its aroma at present. The tobacco of this type raised in the preceding year is only just ready for the manufacturer. The aroma has been pronounced good, but it is believed that the leaf is too heavy for the taste of the general public and the aim this year is to try to produce a somewhat lighter leaf. The results of these experiments in growing Cuban filler leaf seem to warrant a continuation of the experiments in the Southern States and possibly in Ohio for the succeeding year upon somewhat broader lines; and it is hoped that through the efforts of the Bureau of Soils an extension of the domestic filler leaf interests may be accomplished.

By far the most important work in Ohio, however, has been the further introduction of the bulk method of fermenting cigar tobaccos. This work was begun in 1902, when 655,200 pounds were fermented. In 1903, 4,204,800 pounds were fermented, and in 1904 the quantity was increased to 10,208,000 pounds, distributed among the several

types of tobacco as follows: Zimmer Spanish, 5,850,000 pounds; Little Dutch, 582,000 pounds, and seed leaf, 3,776,000 pounds. As the work of the Department there is simply supervisory, and entails the cooperation of the warehousemen, this great increase evidences the remarkable interest that this change in the methods of handling tobacco has to the grower and the tobacco dealer. Its use not only avoids great loss formerly suffered from fungous growth in the case-fermented tobaccos, but also tends to improve the grades of tobacco and therefore increase the profits both to the grower and the handler.

WRAPPER LEAF IN CONNECTICUT.

The experiments in the production of a wrapper leaf in the Connecticut Valley have been continued during the last year. In the beginning of these experiments in 1900, work was undertaken in cooperation with the Connecticut experiment station at Poquonock, on one-third of an acre of land. The tobacco grown on this small plot was submitted to leading leaf dealers and brokers in New York for their opinion. On their judgment, which was very favorable, the Department felt justified in conducting further work in Connecticut upon a considerably larger scale. In 1901, therefore, 40 acres were planted, this time in cooperation with leading tobacco growers in the valley. This tobacco was of satisfactory quality and was sold at Hartford, and although it had been grown under very unsatisfactory climatic conditions a very good price was obtained at the sale. In 1902 a larger acreage was planted by the Connecticut farmers; and leaf dealers of New York—men who had spent their lives in the tobacco trade and who were everywhere recognized as good judges of tobacco—invested money in the production of shade-grown tobacco, not upon the reports of the Bureau of Soils, but on their own judgment of the satisfactory character of the leaf.

Owing to unfavorable climatic and adverse trade conditions, which were entirely beyond the control of the grower, the tobacco produced during that season failed, to a certain extent, to meet the demands of the manufacturers. The climatic conditions in 1903 were very similar to those in 1902—that is, they were unfavorable to the production of a wrapper leaf of the very best grade, and there was not so large a demand for this tobacco as was expected. In 1903 the Bureau had practically ceased its work in Connecticut; but in 1904, still having confidence in the opinion of the trade, and believing that the method of growing tobacco for wrappers under shade is correct, it has conducted an experiment at Tariffville, Conn., where a crop has been produced on a 4-acre plat. Owing to the recent tendency on the part of the trade to wrap the better grades of cigars with the Cuban rather than with the Sumatra style of leaf, 1 acre of this plat was planted to Cuban seed tobacco.

Tobacco of this type grown under shade in Connecticut was exhibited by the Department at the Louisiana Purchase Exposition at St. Louis, and to it was awarded the grand prize as being a leaf of the highest standard of excellence for cigar wrappers.

THE PROBLEM OF MARKET FOR FINE LEAF TOBACCOS.

In connection with this matter of the producing of shade-grown wrapper in Connecticut, the Bureau of Soils has been making an investigation as to the demands of the market for the Cuban type of leaf and as to the practicability of building up a demand for Connecticut shade-grown tobacco of this type. Recent sales of this tobacco have been made, principally in New York and Philadelphia, and the following table shows the distribution of nearly 300 bales of such tobacco and the average price per pound of the lots as sold:

Prices received for Connecticut shade-grown tobacco.

For domestic use, 134 bales:			For domestic use, 134 bales—Con.		
Bales, 17	per pound	$1.75	Bales, 16	per pound	$0.62½
1	do	1.65	4	do	.35
24	do	1.50	For export, 144 bales:		
3	do	1.45	Bales, 14	do	.70
3	do	1.40	30	do	.32½
4	do	1.35	100	do	.30
60	do	1.25	Tops, 104 bales:		
1	do	1.00	Bales, 90	do	.10
1	do	.75	14	do	.08

This table shows that 134 bales have been sold for domestic use at an average price of $\$1.26\frac{8}{10}$ per pound, the highest price being $1.75 per pound for light wrappers, and the lowest price 35 cents per pound for short-sized second-quality leaf. The 144 bales sold for export, at an average price of $\$0.34\frac{4}{10}$, consisted of tobacco of a quality not suited to the home market, principally of sand leaves and short-sized, flimsy tobacco. Nearly all of this tobacco was shipped to the German market. The 104 bales, sold at an average price of $\$0.09\frac{7}{10}$, consisted of short top leaves, the tobacco having no wrapper quality, and being useful only as an inferior filler.

The tobacco experts of the Bureau of Soils see no reason to change their belief that the method of growing tobacco under shade in the Connecticut Valley will produce a wrapper leaf of great excellence, which can be economically used by the trade, and it would seem that the industry should be established upon a commercial scale.

IMPROVING EXPORT TOBACCOS.

Up to the beginning of last year the tobacco work of the Bureau of Soils has been along the lines of improving the methods of culture and handling of the cigar tobaccos, but this year considerable demand has

been made upon the Bureau to assist the growers of the heavy export types of tobacco. The low percentage of tobacco suitable for plug wrappers, and the poor price obtained by the majority of growers, have led the Bureau to make investigations into the production of this type of tobacco, the object being to see if both the yield per acre and the percentage of the higher grades could be increased. A 5-acre experimental plot in Appomattox County, Va., was selected for studying the problem. In this section the finest plug wrappers are grown, and the work would also be carried on close to the Richmond and Lynchburg markets. It is the plan of these experiments to grow the tobacco with different fertilizers and under different methods of culture, to see which will give the best financial results to the grower. It is the intention of the Bureau to extend this work in the future to other districts producing the shipping types of tobacco. It is yet too early to give the results of the present season's work.

BUREAU OF ENTOMOLOGY.

Insect pests cause a loss to the staple crops of the United States estimated at some $500,000,000 annually. The main object of the Bureau of Entomology is to make thorough studies of the insects responsible for these losses and to apply the information gained to limiting or preventing them. The Mexican cotton boll weevil represents the most important field of work of this Bureau during the last few years, but the insect enemies of the cereals, fruits, and other staple productions have been the subject of careful study and experimental work. The results of this work have been notably successful, particularly in the case of the boll weevil and the bollworm.

THE MEXICAN COTTON BOLL WEEVIL.

Congress originally provided $30,000 for the continuation of the investigation of the boll weevil and the bollworm for the fiscal year.

DEMONSTRATION FARMS.

Under this appropriation seven experimental farms were organized in Texas, located at Victoria, Wharton, Austin, San Antonio, Calvert, Willspoint, and Hetty, all together aggregating 558 acres of cotton. The seven localities represented typical variations in soil and climatic conditions of Texas, and enabled the Department to test various methods of controlling the boll weevil under different conditions. They included bottom lands, dry upland subject to irrigation, the black prairie land of Austin, and the soils of river valleys where the presence of timber and moist climate and almost exclusive production of cotton renders the weevil problem more serious than elsewhere. Other farms were on the high, rolling prairie land and river bottoms of the northern part of the State.

The minute investigation of the life history of the weevil, upon the knowledge of which any system of control of the pest and any modification of the present cultural system must naturally be based, was continued at the laboratory at Victoria. In the experimental fields attached to this laboratory also were tested poisons and machines. An expert assistant carried on a study of the weevil in Cuba, one of its native regions, with the hope of finding some effective parasite or some variety of cotton especially resistant to its attacks.

The exact spread of the boll weevil into new cotton regions was determined, and a special investigation of the usefulness of birds in controlling the weevil was instituted. The result of the work of the season of 1903 is summarized in three important publications issued by the Bureau.

Under the provisions of the special appropriation of $250,000 made available January 15, 1904, it was possible to greatly enlarge the work.

The number of experimental or demonstration farms was increased to thirteen for the season of 1904, aggregating 1,077 acres. During the previous season in not one of the seven experimental farms then under operation did the crop fall appreciably below the average production in the United States before the weevil came into Texas, namely, about half a bale to the acre. The cultural system which these farms were designed to illustrate has so far proved to be the only practicable means of controlling the boll weevil, and the work of past years has demonstrated its general success and feasibility. It is the outgrowth of several years of field experiments conducted by the Bureau of Entomology in Texas. The cotton on these farms is planted under a contract which gives the Department complete control of the culture of the crop.

SCIENTIFIC AND LABORATORY WORK.

In addition to the conduct of these demonstration farms, the more purely scientific and laboratory work relating to the study of details of the life history of the weevil and of the possibility of artificial propagation of parasites has been increased. Special work has been done in the attempt to eradicate isolated colonies, to control the danger of dissemination of the weevil by the gins and gin products, notably cotton seed, and the perfecting of quarantine plans to check or prevent the spread of the weevil from Texas to other cotton-growing States.

COOPERATION WITH THE LOUISIANA BOLL WEEVIL COMMISSION.

The weevil having already crossed the line into Louisiana, the Bureau of Entomology has been doing cooperative work with the Louisiana boll weevil commission in eradicating colonies in Louisiana and preventing its further spread into that State, with the idea of protecting not only Louisiana but the more eastern cotton regions. The work of this year has been most successful so far as the experimental farms

and other work in Texas are concerned. It has proved impossible to exterminate the weevil in Louisiana, its distribution in the western counties of that State having become already too wide. Nevertheless its spread has been very greatly checked, and by proper quarantine and exterminative work its eastern progress can be very much delayed.

COLONIZATION OF THE GUATEMALAN ANT.

The Guatemalan ant, which was discovered by Mr. O. F. Cook, botanist in charge of investigations in tropical agriculture of the Bureau of Plant Industry, and which seems to be a very efficient enemy of the cotton-boll weevil in Guatemala, has been the subject of careful experimental work, begun under the Bureau of Plant Industry and afterwards transferred to this office, but remaining under the charge of Mr. Cook. This ant, determined by experts of the Bureau of Entomology as *Ectatomma tuberculatum*, is a tropical species of rather wide distribution throughout Central America and northern South America. Its specific habits were unknown prior to its discovery in Guatemala, but in this region, according to Mr. Cook, it seems to be an important natural enemy of the boll weevil. Nearly a hundred colonies of this ant, representing some 4,000 individuals, were conveyed to Texas, and have during the summer been placed at different points, and are being made the subject of careful study to determine whether this ant offers any hope of control to any extent of the boll weevil under the climatic conditions of Texas. The practical results of this importation can not now be foretold. The ant has, however, maintained itself during the summer, which is a feature of distinct encouragement.

THE BOLL WEEVIL STILL A MENACE.

The future work against the boll weevil in Texas and other Southern States will depend upon the action of Congress. The National menace still exists. The cotton planters of Texas have not all become convinced of the benefit to be derived by following the advice which the Bureau is enabled already to give, based upon its investigations of the past ten years, and therefore further investigation and further demonstration work seem to be necessary. Moreover, the imminent danger of the spread of the weevil to other cotton States indicates the necessity that the General Government should keep a force of men in the field to prove to the entire satisfaction of the planters the value of its advice, to continue the study of the insect in its rapidly changing environment, and to assist in quarantine measures and such other means as are necessary to restrict the spread of the pest.

THE COTTON BOLLWORM AND MINOR PESTS.

The work on this insect, which is the second worst pest of the cotton and ranges throughout the cotton belt, has been continued

during the last two seasons. The work during the season of 1904 has been much increased as a result of the special appropriation made available in January of this year. The principal lines of investigation followed out are field experiments in methods of control, and laboratory and field investigations of life history, habits, and parasitic and predaceous enemies of the insect. The field experiments have demonstrated that the cultural system of control recommended for the boll weevil furnishes the very best means also against the bollworm. The value of spraying and dusting with arsenical poisons and of trap crops was made the subject of careful experiments. This work was done on six contract farms over which the Department had absolute control, as in the case of the boll weevil, representing different localities and climatic and soil conditions. Cooperative work was also done at a number of other points, giving a total of some 400 acres on which experimental and demonstration work was carried on. The work outlined above has been most successful, and the Department is now able to recommend measures which will reduce damage from the bollworm to an inconsiderable amount.

In addition to these two principal cotton pests, other insects depredating on cotton, but of minor importance in comparison with these two, have been the subject of study.

IMPORTED BENEFICIAL INSECTS.

The possibility of keeping injurious insects in check by the introduction and encouragement of natural insect enemies of such injurious species is a very popular subject with fruit growers and farmers, and notable successes have been achieved in this direction. The work in which the Department of Agriculture has been especially interested in this direction during the year has been a continuation of the effort to establish the Asiatic ladybird enemy of the San Jose scale in the Eastern States and the South African black scale parasite in California, together with the kelep or Guatemalan ant enemy of the cotton boll weevil, referred to elsewhere.

LADYBIRD ENEMY OF SAN JOSE SCALE.

The Asiatic ladybird enemy (*Chilocorus similis*) of the San Jose scale maintained itself in numerous colonies in the South during the winter. An examination in Georgia in May last indicated the general presence of the beetle in many of the orchards where it had been liberated. Its rapid multiplication has been prevented, however, in many instances, by the submission of the orchards in question to spraying operations with lime, sulphur, and salt, or other washes, exterminating practically all of the scale food and hence leading to the starvation of many of the beetles. Nevertheless this imported insect has gained foothold and will probably make progress wherever scale food

is abundant. Its spread by artificial distribution of colonies has been continued as far as material has been available. The discovery of the efficiency of the lime, sulphur, and salt wash, and the need in commercial orchards of absolutely clean fruit, will operate against this imported insect as against all other parasites of this scale. It is a comparatively easy matter and not expensive to keep an orchard clean by spraying, and while this is the case it will not be advisable in commercial work to take the slower chance of clearing up by natural enemies, which can never be thorough from the very nature of the case. The successful establishment, however, of this Asiatic beetle in America can not work anything but good, as it is an important agency in the control of scale pests, and will become more efficient in America as it becomes more widespread and abundant.

PARASITE OF BLACK SCALE.

The black-scale parasite (*Scutellista cyanea*) in California has exceeded in usefulness the most sanguine expectations, and has demonstrated that it can withstand the winter climate of California perfectly. The black scale of which it is an enemy is the worst pest of the citrus industry in southern California, and this imported parasite is the first agency which has offered any real hope of control other than by direct spraying or gassing operations. As an illustration of the prolificacy of this parasite, more than 40,000 specimens were distributed from the office of the Los Angeles County horticultural commissioners, and vast numbers were distributed from other centers.

OLDER IMPORTATIONS.

The older importations of beneficial insects, such as the enemy of the white scale of citrous and other fruits in California and the *Rhizobius ventralis*, useful against the black scale in the moist regions of the Pacific coast, have continued their rôle of distinct usefulness, the first named being the most striking case of benefit ever made by an imported insect. The fig-fertilizing insect has enabled the raising of another very large and fine crop of Smyrna figs in the vicinity of Fresno, Cal., and the development of the fig industry seems perfectly assured, and only awaits the necessary lapse of time for new orchards to become established.

IDENTIFICATION OF SCALE INSECTS.

The work with scale insects in general has been actively prosecuted during the year. This group of insects includes some of the most important enemies of fruit trees and shrubbery, and in the South also of various field and garden crops. The small size of most of these scale insects, and the necessity of making careful microscopic preparations of them before determination can be made, render their identi-

fication by field observers difficult, if not impossible. The result is that a great deal of the work of determination comes to this Department from State entomologists and horticulturists, as well as from foreign sources.

INSECTS DAMAGING FORESTS.

The work on tree pests is carried on in cooperation between the Bureau of Entomology and the Bureau of Forestry. During the present year it has related particularly to (1) insect damage in the forests of the Black Hills region, a continuation of the work begun in 1902; (2) an investigation of important timber trees in the State of Washington, particularly the western hemlock, highland spruce, red fir, and other conifers; (3) at the southern station (Tryon, N. C.), damage to the southern pine and cypress; (4) in the middle Appalachian station, damage to imported mahogany and other timber and lumber by introduced and native insects, and to hickory, oak, and hemlock by bark-beetles and tan-bark insects; (5) at the southwestern station (Flagstaff, Ariz.), damage to pine forests by bark-beetles. In the course of this work there has been considerable cooperation with lumbering companies and manufacturers of articles of wood, importers of exotic woods, and forest rangers. The general information gained from this study and from laboratory work at Washington has greatly advanced the knowledge of forest insects and the means of controlling them.

INSECTS INJURIOUS TO VEGETABLE CROPS AND TO FRUITS.

The work reported in previous years has been continued in these two important fields of investigation. A subject of special study during the year has been the insect enemies of sugar beets, covering work done from Nebraska and Michigan to the Pacific Coast States and Arizona, with the object of issuing a comprehensive report on the subject. Work on the insect enemies of the orchard fruits, citrous and deciduous, and small fruits has been continued. The cranberry insects have been made the subject of a special publication.

MISCELLANEOUS WORK WITH INSECT PESTS.

A good deal of work has been done during the year in the study of means of controlling damage by insect enemies of stored grains, such as the flour beetles and meal worms, and particularly of the Mediterranean flour moth, one of the worst of mill pests, which has been reported during the year in many new localities, from New York to California.

Insects affecting shade trees and ornamental plants have been studied, as also the important insect enemies of hothouse plants and indoor cultures.

The investigation of insects in relation to the health of man has been continued. The geographical distribution of the yellow-fever mosquito in the United States has been the subject of special investigation, as having an important bearing upon quarantine measures.

A special study has been undertaken of rice insects in South Carolina in cooperation with the South Carolina experiment station.

INSECT ENEMIES OF GRAINS AND FORAGE PLANTS.

An elaborate investigation of insects affecting grains, grasses, and other field crops has been begun, and a special field agent of wide experience and reputation has been put in charge, with assistants and means for the best work. A further investigation will be immediately undertaken of the Hessian fly, the chinch bug, and the cutworms and wireworms and other insects affecting wheat, corn, clover, alfalfa, and similar crops. The damage by insects in this field is greater than in any other on account of the enormous areas under cultivation and the money value of the product.

EXPERIMENTAL WORK WITH INSECTICIDES.

The most important results confirmed by the experimentation of the year with insecticides relate to the use of the lime, sulphur, and salt wash against the San Jose scale. Experimentation with this wash, long used in California against this scale pest, has been going on in the East for several years, and the results now secured have fully demonstrated its very great value in spite of the somewhat adverse climatic conditions which obtain on the Atlantic seaboard and in the Mississippi Valley. It is a winter application, and very inexpensive as compared with the use of oils and soaps, means hitherto very much employed in the East, and it has the additional very distinct advantage of notable value as a fungicide; so much so in fact that some fruit growers are spraying their peach orchards with this wash, whether they have scale on them or not, simply for its value against leaf curl and other fungi. The usefulness of this wash has very largely decreased the terror which fruit growers have hitherto felt for the San Jose scale.

The possible value of sulphate of copper as a means of controlling mosquitoes, as indicated in a report issued by the office of Vegetable Pathological and Physiological Investigations of the Bureau of Plant Industry toward the close of the year, caused a series of experiments to be instituted by the Entomologist to test the usefulness of this chemical as a means of destroying such larvæ. The results of these tests have shown that it has comparatively small value against mosquito larvæ under normal outdoor conditions of breeding, but it may

prove to be quite effective against mosquitoes in regions where water is kept in cisterns or small storage reservoirs, as, for example, in Cuba and in Panama. The experimentation with this substance is still in progress.

An expert has been put in particular charge of all investigations with insecticides and machinery, and the opportunity for practical work has been very much increased. Experiments are now under way with the insecticides referred to above, and also with petroleum oils; also fumigation experiments on fruit stock and buildings and granaries, and work on the composition of insecticides in cooperation with the Bureau of Chemistry are being carried on.

ENTOMOLOGICAL EXHIBIT AT THE LOUISIANA PURCHASE EXPOSITION.

An elaborate exhibit of the work of the Bureau of Entomology was made during the year for the Louisiana Purchase Exposition—undoubtedly the most extensive and interesting exhibit ever sent out by this Bureau. It contains several entirely novel features of great educational value, and comprises very many cases indicating the life histories of injurious and other insects, together with large models of many of the principal injurious forms and vivaria in which injurious and beneficial insects are shown alive and at work.

SILK CULTURE.

The work in silk culture has been prosecuted in all available lines. Silk reeling has been practically established with imported French reels and the temporary employment of French experts. Several American women have acquired the art of reeling silk, and a beginning has been made in the training of experts in this line of work. The importation of eggs and their distribution to all applicants has been continued; also of mulberry cuttings and rooted plants.

As pointed out in my last report, the establishment of the silk industry in the United States must be a matter of slow accomplishment. The distribution of mulberry cuttings and of silkworm eggs to those who already have mulberry trees at hand should be continued. Eventually enough mulberry trees will be planted to insure a supply of food for a large crop of worms. Numbers of people will also have become familiar with the methods of silk raising, and conditions will then be ripe for the establishment of commercial filatures. In the meantime and under the existing conditions the establishment of some sort of market for cocoons is necessary; and it is for this reason that this Bureau, out of its appropriations, is buying and reeling a crop of cocoons which, though small at present, will increase as the work progresses from year to year.

BEE CULTURE.

In bee culture comparative tests have been continued with the Caucasian and other types of bees and various crosses between these types themselves, in an effort to improve the domestic hive bee and secure certain varieties of special merit for different regions. The general conclusion reached is that the Caucasian race is by far the gentlest that has ever been brought to this country, and lends itself to manipulation and handling without the use of bee veil, and generally without smoke. These bees also are excellent honey gatherers.

The frequent statements that comb honey can be artificially manufactured have been shown to be absolutely false, and the purchaser who gets his honey in the comb may rest assured that he is getting an article manipulated at least by bees.

A special investigation has been made of bee conditions over a considerable area comprising the Middle West and Western States, with the idea to familiarize the expert with the conditions in these regions and to determine the feasibility and the desirability of the importation and establishment of foreign honey-producing plants.

A model apiary of 50 or 60 colonies of bees has been secured, and it is proposed to establish it on the Arlington Experimental Farm as a basis for apiarian investigations and as a breeding station of races and types of bees. The importation of foreign queens of different races has been continued, and studies have been made of honey-producing plants, methods of wintering bees, and bee diseases.

BIOLOGICAL SURVEY.

As heretofore, the work of the Biological Survey has been conducted along the three lines laid down by Congress: (1) Investigations relating to the geographic distribution of animals and plants, including biological surveys and the determination of the life and crop belts; (2) investigations of the economic relations of birds to agriculture; (3) supervision of matters relating to game preservation and protection and the importation of foreign birds and animals.

GEOGRAPHIC DISTRIBUTION.

The Biological Survey is engaged in mapping the natural life zones and crop belts of the country for the primary purpose of aiding the farmer to decide what crops are likely to prove a commercial success in his locality. The work is done by studying the geographic distribution of native animals and plants in all parts of the country, and platting the results on maps showing the distribution of each species. In order to obtain the necessary data the status of the various species must be determined by office study and their ranges laboriously

worked out in the field. The progress already made is gratifying, and a large number of maps are now approaching completion. The individual-species maps serve as the basis of a composite map showing the natural transcontinental belts and their more important subdivisions.

During the current year field work has been carried on over wide areas in California, Texas, New Mexico, Colorado, and Alaska. In California the field operations, for the purpose of securing data for a detailed map of the life and crop zones of the State, have been continued under the personal direction of the Chief. The field parties have practically completed work in western Texas, and are now in New Mexico. Explorations in Alaska have been continued among the northern spurs of the Rocky Mountains, about the upper and middle Yukon, and on some of the islands of southeastern Alaska.

ECONOMIC ORNITHOLOGY.

In the section of economic ornithology, as in previous years, both laboratory work and field observations have been carried on. Orchards, gardens, and grain fields have been visited for the purpose of determining whether the birds damage crops, attack injurious insects, or devote their energies mainly to the wild fruits and weed seeds of the neighborhood; and collections have been made of food materials, including wild fruits, berries, seeds, and insects to assist in the work of determination in the laboratory. During the current year examinations have been made of 2,189 bird stomachs.

In studying the food habits of California birds, with reference both to the damage they inflict upon fruit and the good they do in destroying noxious weeds and insects, a scientist spent seven months (February to October) in the State, interviewing many of the fruit growers and visiting the most important fruit-growing sections. Most of his work was in the orchards, where the actual mischief done by the birds was noted and specimens collected.

In cooperation with the University of California, a study was made of the restrictive influences exercised by birds upon the increase of the well-known and very destructive codling moth. As a result, it was found that the pupæ of the moth are searched out and fed upon to a considerable extent by the black-headed grosbeak (*Zamelodia melanocephala*) and the Bullock oriole (*Icterus bullocki*)—two of the handsomest and commonest song birds of California. Other investigations were made in the same State regarding the supposed injury done by birds to bee keepers. Examinations of many stomachs of birds shot near bee-hives showed in nearly all cases that if bees are eaten at all the ones selected are the males or drones. A careful study of the food habits of the quail or bobwhite made during the year has

demonstrated beyond question that from an economic point of view it is one of the most valuable of North American birds. Some of the insect pests eaten by it are the cotton boll weevil, potato bug, chinch bug, wire-worm, cut-worms of various kinds, and the cotton bollworm.

BIRD MIGRATION.

During the year the usual spring and fall migration schedules were sent to and received from the regular observers and filed for future use. Sixteen thousand notes relating to the migration of warblers north of the Ohio and Potomac rivers were selected and arranged to complete a bulletin on North American warblers. This bulletin is now passing through the press. Work was also commenced on a study of the relations of migration and the weather by comparing the time of spring arrivals with the temperature at the place of arrival and in the region to the southward.

GAME PROTECTION AND INTRODUCTION.

ENTRY OF FOREIGN BIRDS AND ANIMALS.

Constant vigilance is necessary to prevent the introduction into the United States of birds or animals that are likely to become pests. No species, therefore, except a few that are well known and harmless, are allowed to enter this country without a special permit from the Department. And, as an additional safeguard, careful inspection is made whenever through the large size of the consignment or other cause there is any apparent danger that undesirable species may slip in. The permits issued during the year numbered 318 and allowed the entry of 1,470 mammals, 205,400 canaries, and 41,630 miscellaneous birds. Most of the canaries and a large part of the miscellaneous birds came in at New York and were examined by inspectors at that port. Several importations were made of birds intended for liberation, among them 65 capercailzie from Sweden, brought in at New York and destined for the stocking of Algonquin Park, Ontario; 40 Mexican quail, liberated at various points in California by the board of fish commissioners of that State; and 366 European song-birds—goldfinches, bullfinches, larks, and robins—turned loose in British Columbia. Permits were also issued for the entry of about 3,000 eggs of partridges and pheasants.

INTERSTATE COMMERCE IN GAME.

Since the passage of the Lacey Act in 1900, 42 convictions for illegal traffic in game have been secured in cases passing through this Department. Of these, 26 were tried in Federal courts, 16 in State courts. During the past year 10 cases, involving the shipment of 700 birds and 36 rabbits, were reported to the Department. Six convic-

tions were secured, one of which involved the longest distance shipment thus far taken up—from St. Paul, Minn., to Portland, Oreg. In order to expedite cases arising under the Lacey Act, State wardens have been advised to present their evidence direct to the Federal courts instead of referring it through this Department and the Department of Justice. This advice has been followed in two or three instances within the past few months, and indictments have been much more promptly secured in consequence.

Limited available resources have, as heretofore, made it necessary to concentrate efforts in two or three areas, and in all cases prevention of shipment has been given precedence over prosecution after shipment has occurred. The passage of laws by Texas in 1903, prohibiting sale and capture of waterfowl, made it possible for the first time to restrict the enormous destruction of ducks in that State for Northern markets. Through local authorities and express companies general attention was called to the provisions of the State and Federal laws and a close watch maintained on usual shipping routes. No violation of the law was noted, and it is probable few consignments of ducks reached Northern markets from this State during the year.

An attempt was made to ascertain the effectiveness of recent legislation prohibiting shipment and sale of game by means of a special investigation in cooperation with State wardens and others. The kinds and prices of game in the markets of a dozen or more important cities during Thanksgiving week were ascertained. That considerable progress has been made in enforcing shipping laws was conclusively shown; few prairie chickens were on sale in any Eastern markets, and in some instances prices three or four times as high as those of a few years ago were charged; pheasants were absent from the markets of several cities where they were formerly abundant; and at the opening of the season quail were unusually scarce, though later, when the routes of shipment still open were discovered by the trade, they became more abundant.

PROTECTION OF GAME IN ALASKA.

The Alaska game law has accomplished the two main objects for which it was enacted: The shipment of deer hides has been stopped and the export of heads of big game as trophies has been curtailed. The protection of game has been as satisfactory as could be expected in so large a region and without wardens. A mistaken belief, however, that the law does not permit natives to kill game for food, coupled with objections to the presence of visiting sportsmen, particularly on the Kenai Peninsula, gave rise to considerable criticism of the law. This adverse feeling led to the introduction of a bill in the Senate to replace the present law with one doing away with all restrictions except a provision to limit the export of trophies and charge license fees of $25 to residents and $250 to nonresidents for such export. As

the adjournment of Congress without definite action left this measure still pending, the Department deemed it advisable to suspend the issue of permits for the present except in very special cases. Early in June new regulations were issued extending some seasons, permitting unrestricted shipment of bearskins, and making other desirable changes.

MISCELLANEOUS WORK.

A preserve for the elk presented to the Government by Miller and Lux was established in Tulare County, Cal., on the Middle Fork of the Kaweah River, just within the boundary of the Sequoia National Park.

On the Pelican Island reservation in Florida a warden has been maintained through the cooperation of the American Ornithologists' Union and the Department, and the pelicans on the island have been practically undisturbed.

As heretofore, special attention has been given to the duty imposed by the Lacey Act of collecting and disseminating information relating to the propagation, uses, and preservation of birds. The demand for such information is widespread, and much time is devoted to gathering material and preparing it for publication.

RECOMMENDATIONS.

The three distinct lines of work assigned to this Division could be conducted much more economically and effectively were the Division reorganized as a bureau of three divisions, each to have charge of one of these lines, and were a larger amount appropriated for the performance of the work. I have accordingly recommended such reorganization.

BUREAU OF STATISTICS.

On July 1, 1903, the Division of Statistics of this Department, which is the oldest distinctively statistical agency of the Government, antedating by a score of years the creation of this Department, received the broader organization of a bureau.

As now organized the Bureau of Statistics includes a Division of Domestic Crop Reports, a Division of Foreign Markets, and a Miscellaneous Division, which conducts special investigations and collects statistics on rural economics. The work of the Division of Domestic Crop Reports forms the most conspicuous feature of the statistical work of the Department. It employs nearly two-thirds of the entire clerical force of the Bureau, and calls to its aid the public-spirited service of nearly 250,000 voluntary correspondents, whose painstaking service deserves grateful appreciation. The results of its investigations are published monthly in the Crop Reporter, of which over 1,300,000 copies were distributed during the year.

The general appreciation by the business and farming public of the value of the Department crop reports grows steadily. Criticism is not lacking. On the contrary, it is one of the curious features of this work that the more closely reports represent the actual facts and the wider the appreciation of their accuracy the more subject they become to criticism. This is undoubtedly due to the fact that as their general accuracy is more and more widely recognized they necessarily exercise a greater influence upon the markets, thus inevitably favoring or antagonizing, as the case may be, some of those who are engaged in the game of speculation in agricultural products.

This immediately attracts the adverse comments of the losers. Such a result is unavoidable, and is apparently the inevitable penalty the Department must pay for issuing reports so reliable and so generally appreciated as to have instant effect on the markets. Were the reverse true, and were these reports regarded as unreliable, they would not influence prices, and criticisms would be reduced to a minimum.

The Bureau is earnestly engaged in studying the efforts of numerous associations of cotton manufacturers organized in several European countries for the purpose of promoting the production of cotton in new lands, with a view to rendering them more or less independent of the American cotton grower. These efforts are being especially directed to the interior of Africa. Before long it is thought that the Department will be able to publish some valuable matter on this interesting subject.

The production and international movement of grain in the principal European countries is another subject which is receiving the earnest attention of the Division of Foreign Markets.

With the assistance of experts newly engaged, the rice and truck crops will for the first time be made the subjects of systematic and continuous statistical investigation. The grain belt has been redistricted and an additional field agent assigned to it.

OFFICE OF PUBLIC ROAD INQUIRIES.

Popular interest in road improvement appears to be deeper and more widespread than ever before. This is evidenced by the work of improvement actually going on in nearly all sections, by the State road legislation, by the calls for the road literature issued by the Department, and by requests for the advice and cooperation of the Department in building object-lesson roads.

COOPERATIVE FIELD WORK.

For greater convenience and efficiency in carrying on the field work of the Office of Public Road Inquiries the country has been somewhat roughly laid off into four main divisions, with a special agent in each. The work of these and other special agents in the field consists in col-

lecting and disseminating useful information regarding roads and road building, conducting investigations and experiments, attending and addressing meetings, and representing the Department in cooperative object-lesson road work.

At several points in the South the Office of Public Road Inquiries has cooperated in the construction of experimental roads of a mixture of sand and clay, and the results have shown that, in the absence of stone and gravel, this mixture may often be used to great advantage. Other object-lesson roads were constructed, with the cooperation of the Office, in Arkansas, Ohio, Tennessee, Virginia, and West Virginia. These were in most cases first-class macadam roads. An especial effort has been made to keep accurate accounts of the work done in each case, and to report the operations and expenses in such detail as to make the work a source of instruction to all who may read the reports.

Reports from all sections of the country in which experimental and object-lesson roads have been built in previous years are unanimous in commending the character of the work done and testifying to its great influence for good.

It is intended that the work of the Office shall be continued along the present lines of helpfulness and extended so far as practicable, in order that its benefits may be most widely distributed.

STATE ROAD LEGISLATION.

The most important feature in State road legislation of recent years is to be found in the adoption of the State-aid plan. This plan involves a recognition of the fact that road improvement is a matter of general as well as local interest. The inefficiency of the statute labor system of repairing roads, the unwillingness of the rural taxpayers to assume the heavy burdens necessary to the building of improved highways, the popular aversion to the issuance of bonds, and the lack of any central authority capable of coordinating the efforts of local communities, have to a great extent paralyzed efforts to secure general improvement of rural highways. The State-aid plan is intended to counteract these depressing influences. It provides sufficient funds to give scope and system to the efforts for road improvement; it distributes the burden of expense so as to greatly relieve the rural taxpayers; and it stimulates action on the part of local communities, coordinates local effort, assures competent supervision, and secures results of permanence and value.

The main features of the State-aid plan as now adopted in a number of the States are (1) a State highway commission, and (2) annual appropriations from the State treasury to pay a fixed part of the expense for building good roads, the balance of the cost to be met by the counties, the towns, and the owners of property lying along the improved

roads. In nearly all cases the initiative is with the local communities, and the work is done under local control, but according to plans and specifications which must be approved by the State highway commission.

In New Jersey, the pioneer State in the adoption of this plan, the State pays one-third of the cost and the counties two-thirds, part of the county's share being assessed against the towns, the annual State appropriation being $250,000. In New York the State provides for one-half the expense, while the counties must pay 35 per cent and the towns 15 per cent. In 1903 the legislature appropriated $600,000 as State aid. No two States have adopted exactly the same provisions. Since 1890, eleven States in all have provided for a greater or less degree of State aid. They are the six New England States, New York, New Jersey, Pennsylvania, Delaware, and Maryland. In a number of other States the plan is receiving favorable consideration.

OFFICE OF EXPERIMENT STATIONS.

PROGRESS OF THE EXPERIMENT STATIONS.

The agricultural experiment stations throughout the country are maintaining close relations with this Department and are seeking its cooperation in increasing measure. The Department is endeavoring to aid the stations so far as it can with a view to raising the general level of their work in the directions of scientific accuracy and practical usefulness and to bring the results of their experimental inquiries promptly and effectively to the attention of farmers throughout the United States. It is believed that the Federal funds given to the several States for the maintenance of agricultural experiment stations are now spent more fully for useful agricultural investigations than ever before and that the results obtained by the expenditure of these funds, combined with those contributed by a considerable number of the States, will compare very favorably in scientific thoroughness and practical effectiveness with the results obtained with equal expenditures of public funds for similar work elsewhere.

Under the system of State control of the planning and execution of the experimental operations of the State stations and under the liberal terms of the Hatch Act, through which the States are granted Federal funds for the partial maintenance of their stations, there is necessarily considerable diversity of opinion as regards the proper and wise expenditure of these funds. This fact is often overlooked in criticisms of the work of our stations as related to their use of public funds. With the growth of intelligent public opinion in the several States regarding the most useful functions of the experiment stations, the grade of their work has been raised, and when once the local constituency of a station has understood the real purpose and importance of

good agricultural investigations, there has been little difficulty in securing the adherence of the managers of that station to the spirit as well as the letter of the laws under which the station is conducted.

ADVICE AND COOPERATION FROM THE DEPARTMENT.

It has been the effort of this Department to set before the stations a high standard of efficiency and to exert steady pressure for the improvement of their work. The cases of clear departure from the law in the use of the public funds granted under the Hatch Act have been comparatively few, and in such cases this Department has insisted on such an adjustment of expenditures as would protect the Federal funds. In most instances of this kind the stations have had funds wholly subject to State authority which could be spent more freely than the Federal funds and so have easily adjusted their accounts to meet the requirements of the Hatch Act. In some cases this has not been practicable and loss of a portion of the Federal fund of the ensuing year has resulted. Not a year passes but that some stations are persuaded by this Department to forego expenditures of the Federal funds which under the terms of the Hatch Act they might technically insist they had a legal right to make but which after discussion they are convinced are not in the best interests of their work. Especially has there been effected a more liberal interpretation of the duties and responsibilities of the agricultural colleges toward the stations, which are organized as departments of research in these institutions. There are now only a few of these colleges where the narrow and short-sighted policy of dealing illiberally with the experiment stations is maintained, and this Department will not cease its efforts to bring about a change of view and action by such college authorities on this important matter.

As the amount and variety of the cooperation between the bureaus of this Department and the State experiment stations increase there arise from time to time questions of policy regarding the relations of the Department and the stations in such enterprises. To provide a regular agency for the discussion and adjustment of such matters, I have created during the past year a standing committee on cooperation, consisting of the Director of the Office of Experiment Stations and the Chiefs of the Bureaus of Plant Industry and Soils. Several conferences have already taken place between this committee and the executive committee of the Association of American Agricultural Colleges and Experiment Stations.

During the past year a movement looking to the increase of the funds granted by Congress for the use of the experiment stations has been inaugurated and legislation for this purpose is now pending. After a careful study of this matter in connection with the examination of the work and expenditures of the stations during the past two years, I am convinced that the demands on the stations for the exten-

sion of their work which have been aroused by their success in giving direct practical benefits to agriculture in all parts of the country can not be met without increased funds and that they are in a position to make effective use of larger means than they now have at their command. Now that this matter is being publicly discussed and the details of legislation have not been decided, it seems proper to state that in the view of this Department it is highly important that in any further act which Congress may pass for the benefit of the agricultural experiment stations the Federal funds shall be explicitly granted for purposes of agricultural research, and the powers and duties of this Department as related to the supervision of those funds shall be clearly defined.

STUDIES IN CHEESE MAKING.

As the work of the experiment stations advances from year to year experimental data accumulate in many lines, and from time to time results of great general importance come out of this extensive work. A good example of this at the present time is found in the investigations of the stations relating to cheese making. The importance of this in this country is shown by the fact that cheese production now amounts to 300,000,000 pounds a year, valued at approximately $30,000,000. Though cheese making is probably the oldest dairy industry, very little has been known regarding the principles on which it is based. For centuries it has been carried on largely by rule-of-thumb methods, and the reasons for the various processes and the exact nature of the changes brought about by them have been unknown to the cheese maker. He has been guided mainly by the traditions of his art and has depended upon the skill and judgment acquired through long experience.

Within the past ten years several of the experiment stations of this country have prosecuted systematic studies of cheese making with a view of determining the principles upon which it rests and the means of simplifying and improving its processes. Owing to the large number of factors involved the work has been difficult, and for a considerable time the progress was slow. Now, however, the accumulated results are of great practical value, and it may be fairly claimed not only that this great industry has been put on a rational basis, but also that the art of cheese making has been simplified and its processes can now be more easily controlled, so that good cheese can be more uniformly produced.

GAINS IN USE OF FEEDING STUFFS.

The Office of Experiment Stations has recently published a summary of a large amount of work which the stations have done on questions relating to feeding stuffs. Some of the practical results of this work have been very important. The saving and use of corn fodder

(stover), which was formerly so largely wasted over a large part of the country, is a striking illustration of this. Its value as a feeding stuff has been demonstrated, and the best means of utilizing it have been shown by the stations' work, and their continual agitation has brought about very great improvement in farm practice in this respect. At the nominal value of $1 a ton the corn stover crop of the United States would be worth at least $100,000,000. While it is not all utilized, much the larger share of it is, and the practice of doing this is steadily increasing.

The inspection of commercial and condimental feeding stuffs, brought about by the experiment stations, has already had the effect of largely holding in check the adulteration of these products and fraud in their sale. In a number of the States where the laws have been vigorously enforced by the stations inferior articles have been entirely driven out of the market, because farmers would not buy them unless they received the stations' stamp of approval.

THE AGRICULTURAL COLLEGES.

The activity of the colleges in providing special buildings and laboratories for instruction in the different divisions of the science of agriculture continues unabated. Among the buildings of this nature recently completed are the $50,000 agricultural building in South Carolina, the $150,000 agricultural building of the University of Wisconsin, and the agronomy and animal husbandry judging pavilion and the farm mechanics building of the Iowa State College of Agriculture and the Mechanic Arts. The University of Nebraska is erecting a $60,000 building for its school of agriculture.

The appropriations of the year for new buildings at the colleges and for the maintenance of these institutions have also been very large. The State legislature of Virginia appropriated $165,000 for buildings, equipment, and improvements at the agricultural college. The Iowa college has an addition of $50,000 to its maintenance fund, an appropriation of $95,000 to complete the central building, $45,000 for a dairy building, and $10,000 for equipping it, $22,000 for a new dairy farm, and $7,000 for equipment, and $54,500 to begin the construction of a heating plant, with several minor items, including $15,000 annually for the experiment station. The College of Agriculture of Cornell University is now definitely organized under State support, with an appropriation of $250,000 for buildings and equipment. The Illinois College of Agriculture has appropriations for a building for beef cattle, $25,000; another for horticulture, $12,200, and for a storage building for agronomy, $12,500. Minnesota has appropriations aggregating $300,000 for building purposes, including, among other items, $218,000 for a main agricultural building.

STUDY OF RURAL ENGINEERING AND FARM MACHINERY.

There is increasing interest in the formulation of courses in rural engineering and the provision of special facilities for instruction in this important subject. Special attention is being given to instruction relating to the construction and use of farm machinery. The continued scarcity of farm labor in almost all of the agricultural regions in this country makes necessary the employment of farm machinery on even a more extensive scale than has hitherto prevailed. The total value of implements and machinery on farms in this country, according to the last census, was $761,261,500, an average of $133 per farm and of 90 cents per acre of farm land. Much of this machinery is elaborate and complicated in construction and requires mechanical skill and genius for its most efficient operation and care. In very many cases it is also essential that the farmer shall understand how to repair such machinery. It represents an important part of the farmer's invested capital upon which he must earn or pay interest. That there is an enormous waste of money due to neglect and unskillful handling of this part of the farm equipment must be obvious to any one who has traveled through the regions where it is most used. The colleges can therefore do a very important work in training their students so that they will understand the construction, care, and most economical use of farm machinery.

ATTENDANCE, AND EXPOSITION EXHIBIT.

The attendance at the land-grant colleges in 1903 aggregated 52,489 students, of whom 3,146 were in four-year courses in agriculture, and 7,550 in shorter courses in agriculture, dairying, horticulture, and veterinary science. The graduates of these institutions in 1903 were 4,524, and since their organization 53,252. The importance of the colleges of agriculture and mechanic arts as a part of the American system of higher education and research has been notably shown during the past year at the Louisiana Purchase Exposition, where an extensive exhibit of the work of these institutions was made in the Palace of Education.

SECONDARY AND ELEMENTARY SCHOOLS.

Progress has been made during the year along the lines of secondary instruction in agriculture not only in the schools maintained in connection with the agricultural colleges, but also in separate secondary schools, the number of which is steadily increasing. Considerable attention is being given of late to the practical instruction of women along agricultural and horticultural lines.

The introduction of agricultural instruction into the primary schools

is being more widely discussed than ever before at meetings of teachers and farmers. The success of the nature study and school garden movement in a considerable number of city and country schools has led to a demand for the more formal teaching of elementary agriculture in the higher grades of the rural schools. The National Educational Association, State superintendents of public instruction, officers of agricultural colleges, as well as a number of other organizations and numerous individuals in various official positions, have of late interested themselves in the introduction of elementary agriculture and gardening in these schools. The National Educational Association now has a special committee of educators of national repute considering this subject.

METHODS AND TEXT-BOOKS.

At the recent convention of the Association of American Agricultural Colleges and Experiment Stations at Des Moines, Iowa, the standing committee on methods of teaching agriculture made a report in which it gave a brief history of the development of manual training and agricultural instruction in the common schools, and outlined a course of nature study and elementary agriculture for such schools. Outline courses in elementary agriculture have already been prepared by school officers in a number of States. These are supplemented by the formation of clubs of farmers' boys and girls, which are organized for the purpose of conducting simple experiments at their homes. Eight thousand Illinois boys belonging to these clubs exhibited corn of their own raising at the Louisiana Purchase Exposition. In a number of States laws have been enacted requiring teachers to pass examinations in agriculture, and the training of teachers along agricultural lines is already receiving considerable attention at agricultural colleges and schools, and normal schools, especially at sessions held during the summer. A considerable impetus to the movement for the introduction of agriculture in the public schools has been given by the recent improvement of text-books and works of reference. Within the last year or two a number of elementary text-books in agriculture have been published, and some of these seem well suited to use in the rural schools. In one way or another thousands of children in the common schools are already receiving some instruction relating to agriculture, and the movement in this direction is rapidly increasing.

AID FROM THE DEPARTMENT.

This Department is aiding this movement so far as it can without having funds specifically for this purpose. It seems very desirable that the Department should be in a position to give more effective aid to the movement which contemplates the application of the results of practical and scientific investigations to our agriculture through instruction to multitudes of farmers' children in the public schools as

well as in the agricultural colleges. The vast majority of teachers in rural schools throughout the country are unacquainted with the work and publications of this Department and do not understand how these publications might be utilized for instruction in subjects related to agriculture. Very much needs to be done to overcome the prejudice of school officers and teachers against the introduction of agricultural subjects into the schools. It is becoming increasingly clear that the results of the work of this Department and the experiment stations can not be most effectively and widely utilized by our farmers unless in early life they are taught to think and act along the lines in which the application of scientific principles and discoveries is made to appear theoretically rational as well as practically useful. Therefore, to secure the greatest benefit to our agricultural people through the expenditure of public funds in the maintenance of this Department and the experiment stations, we should be able to bring the work of these institutions directly to the attention of our educators and school managers in every State and Territory.

FARMERS' INSTITUTES.

Work in the interests of the farmers' institutes throughout the country has been regularly organized in the Office of Experiment Stations. Special efforts are being made to aid the large force of lecturers who are in the employ of the State directors of institutes. The attention of these lecturers has been definitely called to the numerous publications which this Department and the experiment stations are issuing, which will be useful to them in their institute work, and they have been put in the way of receiving these publications regularly.

There is also a growing movement for the establishment of the institutes in the several States on a more permanent basis. The form of organization most approved is that of a strong local permanent organization in each institute district, combined with a system of oversight and limited control by the central State authority, whose duties and powers are prescribed by law.

ALASKA EXPERIMENT STATIONS.

During the past year experiment stations were maintained at Sitka, Kenai, Rampart, and Copper Center, and cooperative experiments were conducted at Wood Island. Seeds of vegetables and flowers were distributed through the cooperation of the Bureau of Plant Industry to about 1,500 addresses. Many of the recipients report success and further confirm the possibility of raising hardy vegetables and hardy annual flowers in nearly all parts of the Territory south of the Arctic Circle. An investigation of the grasses and forage plants of Alaska is being conducted in connection with the Bureau of Plant Industry. At

Sitka the headquarters building has been completed in accordance with the plans furnished by this Department, except for some minor alterations made in the interests of economy. More attention will hereafter be given at this station to horticulture and the propagation of trees and bushes for distribution to the other stations and over the Territory at large. Some nursery stock consisting of hardy and early maturing varieties of apples, plums, and cherries have been planted, and currants, gooseberries, and raspberries are also being propagated.

SOME RESULTS OF THE WORK AT THE STATIONS.

At the Kenai station about 21 acres have been brought under cultivation. Experience during the past two seasons at this point has shown that the maturing of grain is somewhat uncertain, though an abundance of forage can be grown every year. Cattle do well here, and the station is beginning in a small way to build up a herd.

At the Copper River Valley station, opened two years ago, a number of acres have been cleared and cultivated. During the season of 1903 barley and oats matured, and produced plump and heavy grain. Cultivated grasses seeded in experimental plats did well, and a considerable variety of hardy vegetables were grown. In 1904 an elaborate system of plants has been laid out and extensive experiments are under way with cereals. During August a severe frost destroyed many varieties of the cereals, rendering them fit only for hay, but some barley was matured and the grain saved for seed, and about 90 per cent of the Sixty Day and Finnish Black oats were matured, making about an average crop. This station has the first equipment of farm implements brought into the interior of Alaska. A number of small tracts have been cleared by settlers and are under cultivation at various points throughout the valley.

At the Rampart station grain matured in 1902 and 1903, and for this reason more extensive experiments have been conducted during the past year, and barley, oats, and rye have been successfully grown.

In general the experimental work in Alaska has shown that live stock may be successfully maintained at many points in the Territory. The special agent in charge of the Alaska stations urges the desirability of securing breeds of sheep and cattle better adapted to the climate of Alaska than those which have hitherto been maintained there. It is, however, impracticable to carry on experiments with animals in any large way with the funds now at the disposal of the stations.

GRASS LANDS AND LIVE STOCK.

There are on the southern coast of Alaska, from Cook Inlet to Unalaska, about 10,000 square miles of grass lands, over one-half of which are capable of utilization. On much of this land there is a lux-

uriant growth of grasses often 6 feet high; on the remainder, lying at higher elevations and in more exposed situations, the grasses are too short for hay cutting, but furnish splendid pasturage. That these grasses are nutritious the fat and sleek condition of the cattle furnishes ocular demonstration.

At the present time this great resource is practically untouched, though there are small herds of milch cows at most of the towns and villages. Recently a live-stock company has begun operations with cattle and sheep on Kadiak Island and another company is making actual preparations to utilize Akutan Island.

It is possible for both sheep and cattle to live throughout the winter without care, as has often been demonstrated. Indeed, where cows belong to the natives they are forced to live through the winter with little or no care, eking out an existence by feeding on browse and seaweeds. Milch cows kept by whites are as a rule fed from five to six months, and this may fairly be considered the length of time when animals require feed and shelter.

Sheep raising has thus far not proved successful. The principal trouble seems to have been that the animals were of breeds not adapted to the conditions that prevail on the Alaska coast. In both cases where trials have been made grade animals were imported from the semiarid regions of California and Oregon, where the climate is well-nigh the antithesis of that in Alaska. With other breeds success is not at all unlikely to follow.

For three reasons I am impelled to believe that the Alaska grass lands as a whole can be most profitably utilized at present through dairying. First, because the small population of the Alaska coast limits the market for beef to a small fraction of the possible yield. Second, because of the necessarily long feeding period, five or six months, during which only dairy cattle will yield compensating returns. Third, because the freight to distant markets on concentrated products like butter and cheese is not a serious factor.

The Alaska coast furnishes many admirable sites for dairy colonies or settlements, both on the islands and on the mainland. With such a great wealth of grass as southwestern Alaska possesses it is difficult to believe that it will not become a great dairy country. It is doubtful if equally good opportunities for colonies of dairymen can be found in the United States to-day. Certainly there is no other place left where 320-acre homesteads of magnificent grass lands can be had for the taking. In view of the enormous area of these lands, it seems most advisable that this undeveloped resource be converted into wealth. Perhaps nothing will stimulate this as much as practical experiments and demonstrations by the Department of Agriculture.

HAWAII EXPERIMENT STATION.

A chemist and horticulturist have been added to the staff of the Hawaii station, and in this way the field of operations has been considerably widened. Soil investigations have been undertaken by the chemist, which are of general importance to the agriculture of the islands. The horticulturist has prepared a bulletin on bananas, which not only treats of the cultivation and marketing of this fruit, but also brings together descriptions of a large number of Hawaiian varieties, making possible a systematic study of this important food plant. Experiments are being continued on the cultivation and fertilization of bananas, and a large collection of varieties is being brought together on the station grounds. Experiments in the propagation of mangoes and alligator pears have been begun.

The entomologist has prepared a bulletin on the leaf hopper of sugar cane, which was investigated at the solicitation of many of the planters of the islands. This insect made its appearance quite recently and has proved in certain districts to be a very serious enemy to cane cultivation. The bulletin treats of the life history of the pest, describes the injury produced, and offers suggestions for its control.

Under the immediate direction of the special agent in charge, investigations have been made of some of the fungous diseases of coffee, sugar cane, and other economic plants, and a comparative test of grasses and forage plants has been begun in connection with the Hawaii Live Stock Breeders' Association. Cooperative experiments with tobacco have been conducted on the island of Hawaii with the object of producing a type of tobacco that is especially adapted to Hawaiian conditions. Cooperative experiments on cacao and banana cultivation are also being carried on in connection with the insular board of agriculture and the Hilo boarding school.

PORTO RICO EXPERIMENT STATION.

The work of the Porto Rico experiment station has been considerably enlarged during the past year, partly with the aid of an appropriation of $2,700 made by the insular legislature and nearly $1,200 received from the sale of farm products.

Many permanent improvements have been made on the station farm. A small tile machine was purchased and drain pipes were manufactured on the farm. Practically all the river bottom or alluvial land on the station farm has been drained. This is the first underdrainage ever undertaken in Porto Rico, and it is believed that it will not only greatly enhance the producing power of the station property, but will also serve as a valuable object lesson to the planters of the island. An experimental irrigation system has also been installed on this farm.

A preliminary survey of the principal tobacco districts of the island has been made by a tobacco specialist in the employ of the station, and a report on these investigations is being prepared.

The investigations on different methods of pruning, shading, and fertilizing coffee plants have been continued. An attempt to exterminate the coffee-leaf miner by hand picking the leaves proved the impracticability of this method of repressing this pest. The entomologist of the station has also been investigating the possibility of combating this insect by means of parasites, and reports the discovery of an effective parasite which, it is believed, by careful propagation and distribution, will aid very materially in keeping in check this insect, which is by far the most serious enemy to coffee cultivation now upon the island.

A special study of the diseases of coffee and other plants was made by the botanist of the Connecticut State experiment station, who was temporarily in the employ of the Porto Rico station.

Much attention is being given to the propagation of citrous fruits, especially with a view of obtaining better stock for growing in the orchards of Porto Rico. A bulletin on the methods of production and marketing of oranges, with special reference to Porto Rico conditions, has recently been issued. A large number of tropical fruits, including mango, alligator pear, soursop, nispero, guava, and many others, have been brought together in a tropical fruit orchard.

The tea, rubber, and cacao plantations mentioned in my last report are flourishing and are being extended. Among the tropical vegetables which enter into the variety tests are the yautia, taro, edible canna, arrowroot, cassava, yams, and sweet potatoes, all of which have thus far done well.

Experiments are being carried on with a number of fiber plants. Among these, maguey and sisal have thus far given very promising results. The station has thus far conducted no careful experiments with cotton, but the industry has been extended throughout the island to a considerable extent during the past year, and the station officers report that the results seem to indicate that it is possible to profitably produce a medium grade of Sea Island cotton in Porto Rico.

The report of the Bureau of Soils on the soil survey from Arecibo to Ponce, made by that Bureau in cooperation with the Porto Rico station, has been reprinted in both English and Spanish for distribution on the island. Several other bulletins and circulars in both languages have been issued during the year.

PROPOSED EXPERIMENT STATION AT GUAM.

This Department has recently received a request from the governor of Guam for the establishment of an agricultural experiment station

on that island. In making this request the governor states that the population of the island, consisting of about 11,000 people, and increasing at the rate of about 3 per cent a year since the American occupation, is devoted entirely to agriculture. The farms, which are small, are located in the hills back of the surrounding towns, and the people usually go to them in the early morning, returning to their domiciles at night. As they are devoted to tilling the ground and the raising of fruits, and to nothing else, this is an especially good field for the introduction of such additional fruits and vegetables as only the resources of the Government can command. The revenues of the island are insignificant, so that the people can not afford to pay anything toward an experiment station, although its influence will be very beneficial. There is a considerable tract in the public lands of the island which could be set aside for an experimental farm.

Since it seems quite important that the people of Guam should receive such aid in developing their agriculture as is now given by the Government to our other island possessions, I have recommended an appropriation of $5,000 for the maintenance of a station on this island in cooperation with the Navy Department.

NUTRITION INVESTIGATIONS.

In the nutrition investigations steady progress has been made in the elaborate and fundamental inquiries regarding the laws of human nutrition with the respiration calorimeter, and in the more directly practical studies of the nutritive value of cereals, fruits, and meat. The great importance of these investigations is being recognized, not only by scientific and educational institutions throughout this country, but also in many foreign countries. The constantly increasing number of requests for nutrition publications and for information from individuals, institutions, public schools, medical schools, and similar sources, is a proof that the results of the nutrition investigations excite wide interest and are appreciated.

The cooperative method by which the work of investigation has been distributed among various educational, scientific, and similar institutions in the United States has been productive of as excellent results the past year as hitherto, and a satisfactory amount of investigation has been conducted. This has been made possible in part by the generous support accorded by the cooperating institutions, which have contributed in some cases money, and in practically all cases the use of laboratories, apparatus, libraries, the advice and counsel of skilled experts, and similar assistance. Other institutions have expressed a readiness to join in such researches, provided a comparatively small amount can be allotted them, but with the funds at our command it has not been found possible to extend the inquiry beyond the present limits.

CALORIMETER EXPERIMENTS.

The experiments with the respiration calorimeter during the past year have had to do principally with the comparative values of fat and carbohydrates as sources of energy. The apparatus has been so modified that a given quantity of air is circulated through the respiration chamber, the oxygen withdrawn by the subject being made good by the addition of a fresh supply, while the products of respiration are removed for measurement and analysis. This method of experimenting permits of direct measurements of the oxygen consumption in addition to other factors concerned with the metabolism of matter and energy, and represents a decided advance. In its present form the apparatus is fully as accurate as the form previously described and gives very satisfactory results. The form of apparatus which may be most advantageously used depends upon the character of the problem which is to be studied, since both the earlier type, in which a continuous quantity of air was pumped through the apparatus, and the present type, with the closed air circuit, furnish very accurate means of studying a large variety of problems which have to do with the fundamental laws of nutrition and practical questions connected with the satisfactory feeding of man and domestic animals.

SPECIAL STUDIES OF THE YEAR.

During the year the experimental and editorial work connected with the dietary studies at the Government Hospital for the Insane has been completed and a bulletin describing the results in detail has just been published. The data secured are of great interest in themselves and will prove of material assistance in formulating dietary standards and in other ways, while the experience gained in conducting investigations will prove of great value in future work of a similar character. The studies showed that the diet at the Government hospital was well managed and that the food was abundant, of good quality, and well prepared. As the study progressed it became evident that in many ways economy in the preparation, handling, and storing of food might be introduced which would prevent waste and effect a considerable saving without making any radical change in the character of the menu. In other words, it was evident that, as in all business enterprises, more careful and expert management would prove valuable.

The studies concerned with the nutritive value and digestibility of flours of different grades have furnished very interesting data and the material now accumulated seems sufficient for answering the much-discussed question as to the comparative value of different sorts of flour ground from a given lot of wheat. It seems fair to say that the grades of flour known as whole wheat and graham contain a somewhat

larger proportion of protein and ash than the patent grades, but are inferior as regards the thoroughness with which they are digested. Judging, therefore, by the total material which the body receives, the various sorts of flour are practically equal in value. The mechanical effect which the coarser flours exercise on the digestive tract should not be overlooked.

The dietary studies and digestion experiments with Maine lumbermen have given some interesting and valuable results. In fixing upon dietary standards it was desirable to have data regarding the kinds and amounts of food consumed by persons performing severe work and leading a very active outdoor life. Such conditions were met in the Maine woods. The diet with which the lumbermen were provided was comparatively simple in character though generous in amount. Generally speaking, the quantities eaten were fairly large, furnishing an abundance of both protein and energy. The food was quite thoroughly digested, no difference being observed between these men and those living and working under more usual conditions.

At the University of California, the investigations concerning the nutritive value, digestibility, and place in the diet of fruits and nuts have been continued and important data are being accumulated. The bulletins already published, which report the results of these investigations, have been widely circulated, showing that there is a popular demand for information along these lines. A popular bulletin has been published showing how a surplus fruit supply may be used in the household for the preparation of jams, jellies, and similar products, a class of foods which may be made to supply carbohydrate material in a palatable and attractive form, while at the same time the acids and other bodies which the fruits contain are believed to exercise a beneficial effect on the system.

IRRIGATION AND DRAINAGE INVESTIGATIONS.

METHODS AND PROBLEMS.

During the past year the office of Irrigation and Drainage Investigations made a comprehensive study of the methods and cost of preparing land for irrigation. The results show the need of a better understanding of this subject by farmers. Much has been done by the Government and the States to aid engineers in the right planning of dams and canals, but farmers have not been aided in like measure in understanding how to get the best results out of the water when furnished. A bulletin published by the Department gives descriptions and illustrations of the tools used in grading land and building laterals and of the leading systems in use in distributing water in fields, orchards, and gardens. These studies show that the cost of preparing land for irrigation is far greater than has been realized, varying under

flooding from $2 to $5 an acre and under the check system from $8 to $25 an acre. Here is a large opportunity for saving money to farmers by aiding them in choosing the method best suited to their conditions.

Last year a working agreement was entered into with the Western experiment stations for the systematic collection of information on important features of irrigation practice, which will enable this Department promptly and at small cost to collect and disseminate information of great practical value. This year the subjects studied were the methods of measuring water, the rate of rise of soil water during the irrigation period, and the use of cement and concrete instead of wood in irrigation structures.

DUTY OF WATER AND APPLICATION TO SOIL.

The increasing value of water has given added importance to the studies of its duty, which have been a leading feature of this investigation from the outset. Rights which originally were purchased for $5 an acre now sell for $35 an acre. Annual water rentals have risen in certain districts from $1 to $7 an acre. Every extravagant appropriation of water is a direct incentive to waste, and excess contracts and decrees will continue to be made so long as the quantity actually used has not been determined by accurate impartial measurements. This fact is giving the work of the Department increasing importance. Its reports are being used in fixing water-right decrees, and measurements of the duty of water on streams where adjudications are proposed are urgently requested.

Scarcity of water in the arid West makes it desirable that it shall be used by irrigators in the most economical and skillful way. To aid in making this possible the Department is carrying on a series of scientific studies to determine the quantity of water which will give the best results and the best method of applying it to crops. In one important irrigated district these measurements show that the quantity needed to irrigate 60 acres of land under the method in common use will irrigate 100 acres when applied by another equally feasible method. They also show that the time of irrigation and the quantity of water used have an important influence on the quality as well as on the yield of crops.

PUMPING WATER FOR CROPS.

During the past season records of the performance of over 2,000 irrigating pumping plants, scattered from Texas to Washington, have been obtained. These included many types of pumps operated by gasoline, crude oil, distillate, by steam generated by means of oil, coal, and wood, by electric motors, windmills, and water power. The rapid extension of pumping as a means of extending irrigation gives great practical importance to these studies.

Wind is one of the neglected but promising sources of power for providing water for irrigation and for doing other farm work. An arrangement has been made with the department of farm mechanics in the Iowa State College to supplement the field studies made during the year by more careful tests of the efficiency of different makes of windmills. The makers of these machines have manifested much interest in these investigations and have not only offered to supply the mills needed for testing free of cost but to manufacture others according to any special design suggested by this Department.

Last season's pumping studies lead to the conclusion that there is a broad field for irrigation by pumping; that where the lift of water is less than 50 feet the number of failures are comparatively few. The failures noted have been due to two principal causes: Lack of mechanical knowledge or skill on the part of farmers needed to keep machinery in proper condition; and the selection of pumps of too great or too small capacity for the work to be done.

IRRIGATION IN THE HUMID SECTIONS OF THE UNITED STATES.

The studies of irrigation in Italy show that irrigation is highly profitable in a region having a larger rainfall than the Mississippi Valley, and there seems no doubt that in a similar way it is to have a large field of usefulness in the eastern and southern portions of the United States. One of the special crops which require irrigation is cranberries, and a cooperative arrangement has been made with the experiment station of Wisconsin and the Wisconsin Cranberry Growers' Association, under which the Department is attempting to formulate the principles which should govern the irrigation and drainage of cranberry beds. The studies made in Wisconsin are being supplemented by similar studies in New Jersey.

In the rice districts of Louisiana and Texas practically all the water used in irrigation has to be pumped. The quantity used and the performance of different types of pumps in providing it are controlling factors in the success of this industry. Both these have been studied during the past year.

There is a large territory in central Arkansas which is believed to be well suited to rice growing. The Department is cooperating with the State experiment station to ascertain whether it will pay in this section to pump water to irrigate rice. The results this year, while encouraging, show that it will require considerable experimental work to place the industry on an assured basis.

DRAINAGE INVESTIGATIONS.

Crop production is being extended in this country in three ways—(1) by reclaiming, through irrigation and drainage, lands hitherto worthless or yielding only a nominal return; (2) by improving soil

conditions in lands already under cultivation; (3) by scientific rotation and intensive cultivation of crops.

Since soil drainage is an important factor in all of these, the promotion of practical and efficient methods may do much for the general improvement of agriculture. Original investigation, combined with careful scrutiny of current practice in this and other countries, will enable this Department to place before State and district authorities, cultivators, and landowners the methods and practices suited to their conditions.

The following work was carried on during the year:

(1) An examination of some of the irrigated lands of Utah for which drainage is urgently needed, the giving of advice concerning plans, and the beginning of some experiments in tile drainage to determine the operation of underdrains in certain soils.

(2) The examination of several large drainage projects in the Middle West, in company with engineers, county boards, and interested landowners, followed by reports and recommendations of plans. About 400,000 acres of land are affected by these projects, with an estimated outlay for drainage of $1,000,000.

(3) Collecting and classifying field data upon the construction of levees for protection of river bottom lands; their ditching and drainage by pumps; construction, duty, and operation of land dredges; the construction and behavior of drainage ditches of various sizes.

(4) Collection of data regarding the operation of the older systems of tile drainage in the Middle West, with respect to determining how far conditions may be improved by reconstruction.

A preliminary examination of a portion of the Everglades in Dade County, Fla., was made in conjunction with the Bureau of Plant Industry, and it is thought that the Everglade soil can be made profitable for growing subtropical fruits if it can be sufficiently drained. In view of the interest taken in growing fruit and vegetables in southern Florida for the Northern winter markets, the reclamation of the Everglades merits further attention.

The lines of work carried on during the present year indicate the widening importance of this branch of agricultural improvement. The condition of much of the farming land in the older irrigated districts, and especially in Utah, demands prompt and active relief through drainage, or the loss already suffered by bogging of the land will be rapidly augmented. The Department can render great assistance to the people of these sections by enabling experts to direct and assist in starting practical drainage operations in localities where farmers are ready to begin.

An entirely different class of problems has been encountered in connection with the drainage of the peat swamp lands of central Wisconsin. Here the assistance of the experts of the Department has been

requested in order to determine the manner in which drainage should be accomplished and regulated during the subsequent treatment of these marshes.

The reclamation of tidal marshes is a subject upon which numerous inquiries have been received and which may be profitably studied.

The further development of the prairie lands of Arkansas and the heavy cotton lands of Mississippi will depend upon the introduction of more thorough methods of drainage. There is no public information available bearing directly on the treatment of the drainage problems there encountered, although it is a fundamental matter in the development of certain lands in these States.

The drainage experts of the Department have given considerable time and thought in advising with and aiding agricultural colleges and stations about courses of instruction in drainage engineering and the carrying out of experiments in drainage. The establishment of these courses of study and the special training of men to carry out this branch of farm improvement promise much for the betterment of soil conditions and soil production in future years. The success of these classes is shown by the fact that Illinois has 42 and Iowa 65 students at present enrolled in drainage engineering.

AGRICULTURAL ENGINEERING.

The valuable results which have come from including irrigation and drainage in the work of the Department leads me to believe that this investigation should include two other branches of agricultural engineering with which they have a close relation. These are farm buildings and farm machinery.

That this Department should give some attention to the convenience and healthfulness of farmhouses and farm buildings would not seem to require any argument. These have such vital relation to the attractiveness and profits of farming and to the improvement of the social and industrial conditions of farm life that they ought not to be ignored by this Department.

There is urgent need of study of the important question of ventilation and lighting in farm barns. A recent investigation carried on by the Agricultural College of Wisconsin has shown that scores of costly barns, intended to house valuable blooded live stock, and on which thousands of dollars have been expended to secure perfect sanitary conditions, are a complete failure so far as ventilation is concerned; and that this lack of proper ventilation is causing serious increase in the spread of tuberculosis and seriously impairs the profits of feeding. Hundreds of farmers are delaying the building of barns because, while they realize the nature of the difficulty and the necessity for its remedy, they do not know how to accomplish it. It is a striking but admitted fact that we are so ignorant of the proper principles of barn ventila-

tion that many of the costliest structures built in recent years have been the most defective in this regard.

There is another reason for this Department giving some attention to the subject of farm buildings. We are entering a transition period in which the cheap wood construction of former years is giving way to permanent structures of stone, concrete, and iron. Farm houses, through better water supplies, plumbing, and sanitation, are being made as convenient as those of the city. The working out of these changes involves so many new problems that the Department is being called upon by experiment stations, improvement associations, and communities for advice and information which if furnished could not but result in a marked improvement in the conditions of farm life.

MACHINERY AND MOTIVE POWER.

Closely related to the healthfulness, convenience, and cheapness of farm buildings is the right selection, care, and use of farm machinery. The studies of pumping machinery have shown that the most important factor in its successful use is the mechanical skill of the farmer, and we are beginning to understand that the increased complexity and cost of farm machinery make the education of the American farmer along these lines more and more desirable.

No more significant change is taking place in American agriculture than the extent to which different kinds of motive power are taking the place of men and animals. The use of the traction engine and automobile in the place of the horse on the country roads, the employment of gasoline, steam, wind, and electric power to operate mowers, threshers, plows, feed cutters, corn huskers, and dairy machinery are illustrations of epoch-making changes that are now going on on every modern American farm. On one ranch in California there is $60,000 worth of farm machinery operated by some other power than animals or man. For want of proper information these changes are involving farmers in serious mistakes and large losses. They buy motors not suited to their requirements or which they do not know how to operate. They buy machinery not adapted to their condition and cause its rapid destruction by not knowing how to care for it.

There is made and sold each year in this country about $100,000,000 worth of farm machinery. Fully one-half of this goes into the hands of men who do not know how to select it wisely or to keep it in proper condition. The waste which results runs into millions of dollars annually. In addition, implement manufacturers lose large sums in making and attempting to introduce machinery unsuited to the work it is intended to perform, with a resultant loss to both farmers and manufacturers.

Realizing the need of improvement in these matters, and partly to meet the requests of implement manufacturers for young men having

agricultural and mechanical training which will enable them to design and construct implements suited to the conditions of the American farm, a number of agricultural colleges and experiment stations have inaugurated courses of instruction and begun systematic experimentation for the purpose of bringing about a general diffusion of intelligence about this feature of farm work. They have appealed to this Department for aid in this work similar to that already given them in other lines of agricultural investigation.

TESTS OF CORN PLANTERS AND WINDMILLS.

As illustrating the important results which are destined to come from the inauguration of this work, one of the results of an investigation carried out by the Iowa State College, a pioneer in this line of education and experimentation, will be given. It began its study of farm machinery with the operation of corn planters, because no single factor contributes more to the yield than securing a uniform stand, and this is impossible if the seed is not planted evenly. The machines for planting corn in hills are intended to drop from three to four grains, yet farmers have been buying, and implement makers manufacturing and selling, planters without any definite knowledge as to how they behave in this respect. In making this test all of the leading machines were included. It brought out the following significant facts:

(1) That no planter now made will drop evenly unless the grains have been graded. The introduction of seed-grain graders followed, and was an immediate, important, practical gain to agriculture and to manufacturers of this kind of machinery.

(2) That with graded grain certain types of machines do accurate work.

(3) That other types will not drop evenly under any conditions.

The important and encouraging feature of this investigation has been the interest shown by manufacturers who have accepted the results as impartial and conclusive. Makers of machines found defective were as ready to accept the results as the makers of those which operated properly, the defects being at once corrected.

The test of windmills by the Iowa State College to determine the designs and sizes best suited to lifting water for irrigation promises to lead to important results in extending the use of this motive power in grinding grain, handling and storing produce, and doing some other kinds of farm work practically without expense, which formerly required a considerable expenditure for man or animal power.

NEED OF AN EXPERT IN FARM BUILDINGS AND MACHINERY.

The requests of the colleges and stations for aid in carrying out these investigations and in planning courses of instruction have been

supplemented by numerous similar requests from farmers for advice and assistance about the selection and operation of different kinds of farm motors and other farm machinery. In the absence of any special arrangement for dealing with these problems, they have been referred to the Office of Experiment Stations and dealt with by the Irrigation and Drainage division of that Office; but there are at present no funds which can be utilized for systematic work along these lines. I am of the opinion that results of great value, alike to the farmers and the manufacturers of agricultural machinery, will come from the extension of the Department's work in agricultural engineering to include studies of this character, in cooperation with the agricultural colleges and experiment stations. I have, therefore, asked Congress for an appropriation which will enable us to employ an expert in farm buildings and farm machinery, in connection with the irrigation and drainage investigations.

DIVISION OF PUBLICATIONS.

The publication work of the Department is a faithful reflex of its activity and growth. The diffusion of the valuable information acquired by the Department is effected almost entirely through this medium. The time was, indeed, when in spite of the comparatively few publications issued, the cost of printing them amounted to far more than half the entire expenses of the Department. At present the entire cost of this work is not even one-sixth of the total expenditures of the Department, and yet the number of publications issued during the past fiscal year aggregated 972. Of these, 379 were new, comprising about 23,000 pages of matter. The number of copies of all publications issued during the year aggregated 12,421,386. The 600 reprints attest forcibly the extent of the demand for the Department publications.

Of the whole number printed 415 were Farmers' Bulletins, of which 25 were new and 390 reprints. The total number of copies of these issued during the year was about 6½ million, very nearly 5 million being distributed upon the orders of Senators, Representatives, and Delegates in Congress.

A very gratifying feature reported by the Department Editor is the constantly increasing demand for the Department publications by educational institutions, mainly for class work. This has added, however, very much to the demands made upon us, and, unfortunately, has greatly increased the instances where it has been found impossible to comply with applicants' requests owing to the exhaustion of the supply.

This suggests the possibility, with the cooperation of Congress, of utilizing, after sufficient time has elapsed, a portion of the unused Congressional quotas of many of our documents. If some plan could

be devised, with the approval of Congress, whereby such unused quotas could be made available to the Department, a great deal of valuable matter would go into circulation which at present is not used in any way.

REPRINTING AND SALE OF DEPARTMENT BOOKS.

It is gratifying to be able to report that Congress at its last session adopted a resolution authorizing the Superintendent of Documents to utilize the funds received by him from the sale of public documents to reprint such as are in continuous demand, subject to the approval of the head of the Department from which the document to be reprinted had emanated. This official courteously supplies the information that out of a total of 47,800 Government documents disposed of by him during the fiscal year, for which he received the sum of $12,606.17, 31,860 were publications of this Department, and the amount received therefor was $4,309.60. This again testifies in a marked manner to the increasing appreciation of the work of the Department, especially in view of the very large gratuitous distribution, not only directly through the Department, but also through members of Congress.

REDUCTION OF COST OF PRINTING.

Every effort has been made to reduce the cost of printing. The editions have been restricted to actual and urgent requirements, and every means to reduce expenses, short of interfering with efficient service, has been resorted to. In the matter of illustrations especially, originally a very natural source of extravagance, rigid restrictions have been imposed. As a result, notwithstanding the considerable increase in the number of publications and in the total number of pages of new matter, the number of illustrations in the new publications issued during the year has been reduced by over 500, or more than 20 per cent of the previous year.

THE LIBRARY.

The Department's collection of agricultural and technical scientific literature has been enriched the past year by the addition, by purchase and gifts, of more than 4,000 volumes. As a working library for the practical agriculturist and scientific investigator this collection of books now stands unsurpassed by any single collection. Some of the special collections of technical scientific works rank among the first in the country. More than ever before have the resources of the Library been made available to scientists in various parts of the country. Loans of this nature, which do not interfere with the progress of work in the Department, are greatly appreciated by experiment station workers in particular. Among the many valuable additions to the Library the past year have been a number of rare entomological

works, which have long been needed to make the collection of books on this special subject more nearly complete. A printed catalogue of the books on entomology in the Library will be issued in a few months, thus adding another contribution to the printed subject-catalogue of the Library.

In return for the large number of Department publications transmitted to foreign countries through the Library, the number of exchanges from governments, institutions, and societies has greatly increased. These publications cover largely the results of current scientific work abroad and are of signal importance in the work of the Department.

The cataloguing of current accessions has practically been kept up to date. Printed index cards for the Department publications have been issued in larger numbers than before to meet the increasing demand from libraries in all parts of the country which receive the publications indexed. In addition to these cards similar cards have been prepared for three important agricultural periodicals, the printing, distribution, and sale of the latter cards having been carried on in cooperation with the Library of Congress. The quarterly Library bulletin of accessions has been regularly issued.

The number of volumes bound the past year has exceeded that of any previous year, yet the desired number of 3,000 volumes a year, until there are no unbound volumes on the shelves, has not been reached from lack of sufficient funds to provide for this work.

With the growth of the Department the work of the Library has increased proportionately, both in the direction of the purchase of books and periodicals and in respect to reference work in connection with current investigations. Each year its steadily increasing resources make the Library a working collection more and more depended upon for necessary data in the furtherance of Department work in its numerous branches.

ACCOUNTS AND DISBURSEMENTS.

The total amount appropriated by Congress for the expenses of the Department for the fiscal year ended June 30, 1904, was $5,258,160, an increase of $244,200 over the appropriations for the preceding year. Of this amount about four and one-half millions had been expended at the close of the year, and the unsettled accounts were nearly sufficient to consume the unexpended balance of $768,839.43. The appropriations for the current year aggregate $5,942,040, an increase of $683,880 over those for the year ended June 30, 1904.

There was received from various sources and deposited in the Treasury the sum of $11,322.58. Among the larger items of these receipts were $4,392.46, resulting from sales of condemned property, $2,960.69

from sales of American products in Europe, and $2,337.33 for telegraph service by the Weather Bureau.

The amount appropriated for rental of buildings for the use of the Department in the District of Columbia for the current fiscal year is $39,820, an increase of $11,920 over the appropriation for the past year.

During the year buildings for the Weather Bureau have been completed at seven different points at a total cost for sites and construction of $70,900. Buildings are in course of construction at four points, the total cost of which will approximate $43,642. The total value of buildings and sites now owned by the Weather Bureau in the District of Columbia and at other points is $382,662.67. The erection of buildings for the use of the Weather Bureau saves a large annual expense for rentals.

PERSONNEL OF THE DEPARTMENT FORCE.

The annual report of the Appointment Clerk shows that the total number of persons constituting the body of the Department of Agriculture on July 1, 1904, was 4,504, an increase of 2,160 since July 1, 1897. In addition, there are nearly a quarter of a million special correspondents and reporters who, although receiving no financial remuneration from the Department, cooperate with it and render it much valuable service. These deserve the utmost credit for the public spirit which animates them.

PROGRESS ON NEW DEPARTMENT BUILDINGS.

The work connected with the new buildings for the Department of Agriculture, authority for which was announced in my last report, has progressed satisfactorily during the year. As already announced, Congress has authorized an expenditure of $1,500,000 for these buildings. For the greater part of the past year the architects have been engaged, under the direction of a committee consisting of three bureau chiefs in the Department, in preparing the detailed plans and specifications for the buildings. The plans were completed in full August 25, 1904, and steps were at once taken for the securing of proposals. In asking for proposals it was planned to have the matter considered under two general propositions: (1) The buildings to be erected entirely of granite, and (2) the buildings to be erected with granite base and marble superstructure. Twenty bids for the entire work were received, opened, and scheduled on November 10. The bids on the complete structure ranged from $1,153,000 to $1,612,000. After careful consideration by the building committee and the architects, it has been decided to erect the buildings with granite base and marble superstructure. The two lowest bids for this work were submitted by Mr. Ambrose B. Stannard, of New York—one for $1,206,000, the other for $1,199,000, the difference of $7,000 in price being caused by the dif-

ference in style of granite used for the base. The committee has unanimously recommended that Mr. Stannard's bid for $1,206,000 be accepted, and this has been done. It is gratifying to announce, therefore, that the actual work on construction will begin within the next few days.

THE LATE COL. J. H. BRIGHAM.

In concluding my report, it becomes my sad duty to record the death of Col. Joseph Henry Brigham, Assistant Secretary of Agriculture, which occurred suddenly at Delta, Ohio, on June 29, 1904.

Colonel Brigham enlisted in 1861 and served throughout the war with great credit, being mustered out with the rank of colonel. From the date of his enlistment, Colonel Brigham may be said to have devoted his life to the service of the public, and especially to the cause of agriculture. He was for six years a member of the Ohio State board of agriculture, and served one year as its president. He had also served in the Ohio State senate, and had been appointed by the late President McKinley, then governor of Ohio, president of the State board of managers of the penitentiary of that State. Prior to his appointment by President McKinley to be Assistant Secretary of Agriculture, however, he was perhaps best known as master of the National Grange, a position which he held for nine years.

While he was serving as Assistant Secretary I had the honor to recommend him for appointment on the Government board of managers of the Pan-American Exposition as the representative of the Department of Agriculture, and he was subsequently appointed chairman of the board by President McKinley. By your appointment he held the same position on the Government board of managers of the Louisiana Purchase and the Lewis and Clark expositions, and he was filling these positions when he died.

Colonel Brigham was frequently designated to represent the Department at important gatherings throughout the country, and on all such occasions he not only succeeded in interesting and impressing his audience, but by his unassuming deportment, genial yet dignified, he added greatly to his own and the Department's popularity. At his funeral at Delta, Ohio, on the 3d day of July last, which served to demonstrate in a marked manner the high esteem in which he was held by his fellow-citizens, his friends and neighbors, the Department was represented by a committee of its officers appointed by me for this purpose.

Born and bred a farmer, Colonel Brigham was a notable example of a man who attained eminence without ever abandoning the occupation of his youth. His experience and judgment, his public spirit and fidelity to duty, made him valuable in every position which he filled, and it is with a deep sense of personal and public loss that I pen this record of his death.

In the foregoing report I have endeavored to show the relation of the farmers to their coworkers throughout the country, and also the leading position which agriculture occupies among our industries. I have endeavored to give an outline of some of the directions in which the Department seeks to help the farmers of the United States. Its existence is justified only by the extent to which it serves the tiller of the soil through research and the practical application of science.

Respectfully submitted.

JAMES WILSON,
Secretary.

WASHINGTON, D. C., *November 26, 1904.*

REPORT

OF THE

SECRETARY OF COMMERCE AND LABOR.

DEPARTMENT OF COMMERCE AND LABOR,
OFFICE OF THE SECRETARY,
Washington, December 1, 1904.

To the PRESIDENT:

I have the honor to submit herewith, for transmission to Congress, in accordance with the provisions of the organic act, the annual report of this Department.

The present organization of the Department is practically as presented in the first annual report of the Secretary. The Bureau of Manufactures, authorized under the organic act, was not organized during the past year because of the insufficiency of the appropriation. The complete organization of the Secretary's Office was postponed for a similar reason.

APPROPRIATIONS AND EXPENDITURES.

The itemized statement of expenditures from the contingent fund of the Department of Commerce and Labor will be transmitted to Congress in the usual form.

The following table shows the objects and amounts of the annual appropriations for the fiscal year ended June 30, 1904, of the balances of appropriations for public works which, under the law, are expended without regard to any particular fiscal year, available July 1, 1903, and of permanent indefinite appropriations:

	Annual appropriations, 1904.	Appropriations for public works.	Permanent indefinite appropriations.	Grand totals.
Office of the Secretary of Commerce and Labor and Bureaus of Corporations and Manufactures	[a]$315,860.06			$315,860.06
Bureau of Labor	184,220.00			184,220.00
Light-House Board	44,260.00			44,260.00
Light-House Establishment	3,546,000.00			3,546,000.00
Light-houses, beacons, fog signals, etc		[b]$3,329,226.25		3,329,226.25
Bureau of the Census	1,396,749.59			1,396,749.59
Bureau of Statistics	65,570.00			65,570.00

[a] The unexpended balance July 1, 1903, of the appropriations for the fiscal years 1903 and 1904, and the deficiency appropriation for the fiscal year 1904.

[b] The aggregate of 108 items of appropriations made at different times by Congress for repairs to and the erection of light-houses, beacons, fog signals, light-ships, light house depots, etc., remaining unexpended July 1, 1903. Contracts have been made, or will be made as soon as plans and specifications can be prepared and approved, that will require the expenditure of the entire sum. Of the amount, $1,188,100 was appropriated by the act of Congress approved March 3, 1903, entitled "An act making appropriations for sundry civil expenses of the Government for the fiscal year ended June thirtieth, nineteen hundred and four, and for other purposes."

	Annual appropriations, 1904.	Appropriations for public works.	Permanent indefinite appropriations.	Grand totals.
Office of Supervising Inspector-General, Steamboat-Inspection Service	$11,940.00			$11,940.00
Steamboat-Inspection Service			$388,359.70	388,359.70
Bureau of Navigation	26,480.00			26,480.00
Salaries, shipping service			60,905.89	60,905.89
Services to American vessels			10,633.37	10,633.37
Refunding penalties or charges erroneously exacted			2,988.87	2,988.87
Bureau of Navigation	19,426.00			19,426.00
Expenses of regulating immigration			1,304,398.31	1,304,398.31
Enforcement of the Chinese-exclusion act	500,000.00			500,000.00
Enforcement of alien contract labor laws	150,000.00			150,000.00
Ferryboat, New Island, repairs, etc., at Ellis Island, N. Y., immigrant station		$337,546.90		337,546.90
Bureau of Standards	195,950.00			195,950.00
Coast and Geodetic Survey	[a] 918,285.06	119,601.62		1,037,886.68
Bureau of Fisheries	537,640.00			537,640.00
Fish hatcheries, launch, steamer, etc		162,280.68		162,280.68
Salaries and expenses of agents at seal fisheries in Alaska	12,950.00			12,950.00
Supplies for native inhabitants, Alaska	15,000.00			15,000.00
Expenses, inspectors of pelagic seal skins	100.00			100.00
Protection of salmon fisheries of Alaska	7,000.00			7,000.00
Publication of diplomatic, consular, and commercial reports	40,000.00			40,000.00
Contingent expenses, bureaus transferred from Treasury Department, including rents; and postage, numbering machines, etc	19,052.00			19,052.00
Salaries of positions transferred from State Department	5,700.00			5,700.00
Salaries of positions transferred from Treasury Department	11,640.00			11,640.00
Miscellaneous items of appropriations transferred from Treasury Department	662.00			662.00
Repairs of Butler Building	1,000.00			1,000.00
Shelving and transferring records	266.40			266.40
Repairs and heating apparatus, Richards Building	3,682.00			3,682.00
Total	8,029,433.11	3,948,655.45	1,767,286.14	13,745,374.70

[a] Of this amount $260,760.06 is to be expended without regard to fiscal year.

The following table shows the disbursements made by the disbursing clerk of the Department for the fiscal year ended June 30, 1904:

Appropriations.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Salaries, Department of Commerce and Labor, 1903 and 1904	$18,441.30	$22,429.34	$26,738.77	$45,203.80	$112,813.21
Salaries and expenses, special agents, Department of Commerce and Labor, 1903 and 1904	7,076.06	11,239.60	13,759.77	21,617.66	53,693.09
Rent, Department of Commerce and Labor, 1903 and 1904	3,943.32	2,054.98	3,124.13	3,082.47	12,204.90
Contingent expenses, Department of Commerce and Labor, 1903 and 1904	15,738.45	24,519.44	14,650.95	20,918.69	75,827.53
Salaries, Department of Labor, 1904	26,483.37	26,119.38	26,595.00	26,263.41	105,461.16
Miscellaneous expenses, Department of Labor, 1904	12,825.71	18,640.98	15,863.62	12,788.96	59,619.27
Stationery, Department of Labor, 1904	17.10	102.00	456.24		575.34
Library, Department of Labor, 1904	124.92	64.31	291.68	417.69	898.60
Rent, Department of Labor, 1904	1,125.00	1,687.50	2,250.00	1,687.50	6,750.00
Contingent expenses, Department of Labor, 1904	213.39	446.33	553.27	1,257.98	2,470.97
Postage to Postal Union countries, Department of Labor, 1904	150.00		150.00	150.00	450.00
Salaries, Bureau of Statistics, 1904	16,412.29	16,720.33	16,817.50	16,344.92	66,295.04
Collecting statistics relating to commerce, 1904	620.20	838.10	954.46	1,587.24	4,000.00
Publication of diplomatic, consular, and commercial reports, 1904	2,214.27	4,475.40	14,110.17	7,012.95	27,812.79
Salaries, Office of Light-House Board, 1904	10,382.51	10,686.46	10,811.75	10,716.11	42,596.83
Salaries, Bureau of Navigation, 1904	6,544.17	6,225.40	6,202.14	6,385.14	25,356.85
Salaries, National Bureau of Standards, 1904	15,715.00	17,522.01	18,075.47	18,442.11	69,754.59
Equipment, National Bureau of Standards, 1904	5,662.02	19,057.35	28,288.83	13,677.61	66,685.81

Appropriations.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Improvement and care of grounds, Bureau of Standards, 1904 and 1905				$500.00	$500.00
General expenses, National Bureau of Standards, 1904	$1,958.86	$2,220.55	$2,076.41	3,003.80	9,259.62
Salaries and traveling expenses of agents at seal fisheries of Alaska, 1904		2,193.95	2,799.05	1,101.05	6,094.05
Protection of salmon fisheries of Alaska, 1904	910.35	1,911.74	1,333.80	1,262.47	5,418.36
Salaries, Bureau of Immigration, 1903 and 1904	4,407.90	3,993.08	4,574.38	5,580.45	18,555.81
Salaries, Office of Supervising Inspector-General, Steamboat-Inspection Service, 1904	2,887.20	3,079.53	2,985.00	2,985.00	11,936.73
Salaries, Steamboat-Inspection Service	75,125.03	76,048.23	76,738.18	76,407.95	304,319.39
Contingent expenses, Steamboat-Inspection Service	21,452.58	16,564.00	11,368.49	16,662.26	66,047.33
Enforcement of the Chinese-exclusion act, 1904	41,748.31	91,111.33	104,122.14	105,136.97	342,118.75
Expenses of regulating immigration	248,028.94	325,461.88	314,016.88	379,389.56	1,266,897.26
Enforcement of the Chinese-exclusion act, 1903	11,820.28			148.31	11,968.59
Miscellaneous expenses, Department of Labor, 1903	1,093.90				1,093.90
Contingent expenses, Department of Labor, 1903	356.51				356.51
Preservation of census records, Census Office, 1904	1,470.00	1,436.72	1,410.00	1,200.04	5,516.76
Contingent expenses, Department of Commerce and Labor, 1904 (bureaus transferred):					
Stationery	1,313.76	2,331.17	327.31	.75	3,972.99
Newspapers and books	18.00	30.56	53.43	54.50	156.49
Freight, telegrams, etc	2.40	74.30	157.77	47.44	281.91
Ice		68.43		21.52	89.95
File holders and cases		126.72		55.27	181.99
Gas, etc	32.66	59.66	55.91	54.40	202.63
Carpets and repairs		4.76	152.16	116.24	273.16
Miscellaneous items	63.29	163.31	5.40		232.00
Furniture, etc	2.30	716.35		4.00	722.65
Rent	3,034.96	1,939.99	3,246.64	3,543.31	11,764.90
Postage			205.00		205.00
Numbering, adding, and other machines		48.50	397.75	10.00	456.25
Repairs to Butler Building, Washington, D.C.			167.00	65.30	232.30
Equipment, National Bureau of Standards, 1903	2,541.68	1,068.25			3,609.93
Publication of diplomatic, consular, and commercial reports, 1903	951.13	9,600.03			10,551.16
General expenses, National Bureau of Standards, 1903	119.50	66.29			185.79
Equipment of laboratory, National Bureau of Standards, 1902	1,475.25				1,475.25
Protection of salmon fisheries of Alaska, 1903	601.30				601.30
Steel twin-screw ferryboat, Ellis Island, N. Y.		26.85	55,184.06	38,234.10	93,444.98
New Island near Ellis Island, N. Y.		128.12			128.12
Repairs, etc., property at Ellis Island, N. Y.	20,345.91	13,574.74	1,950.85		35,871.50
Salaries and traveling expenses of agents at seal fisheries in Alaska, 1903		5,471.20			5,471.20
Repairs and heating apparatus, Richards Building, Department of Commerce and Labor, 1904		37.50		105.50	143.00
Total	584,951.08	742,386.65	783,021.33	843,244.43	2,953,603.49

The disbursements during the fiscal year ended June 30, 1904, from the annual appropriations for that year, from the appropriations for public works, and from the permanent indefinite appropriations during the same fiscal year were as follows:

By the disbursing clerk, Department of Commerce and Labor, on account of salaries and expenses of the Office of the Secretary of Commerce and Labor, the Bureaus of Corporations, Labor, Statistics, Navigation, Immigration, and Standards, the Light-House Board, the office of the Supervising Inspector-General of the Steamboat-Inspection Service, expenses of regulating immigration, expenses of enforcing the Chinese exclusion act, salaries and expenses,

Steamboat-Inspection Service at large, salaries and expenses of agents at seal fisheries in Alaska, protection of salmon fisheries of Alaska, publication of diplomatic, consular, and commercial reports, and supplies for native inhabitants of Alaska (shown in detail in the above table of expenditures)	$2,953,603.49
By the disbursing clerk, Bureau of the Census, on account of salaries and expenses of the Bureau of the Census	1,189,411.90
By the special disbursing agent, Coast and Geodetic Survey, on account of salaries, expenses, and public works of the Coast and Geodetic Survey	764,464.57
By the special disbursing agent, Bureau of Fisheries, on account of salaries, expenses, and public works of the Bureau of Fisheries	590,877.05
By the special disbursing agents of the Immigration Service at large	41,504.46
By the engineer and naval secretaries of the Light-House Board, inspectors and engineers detailed from the Army and Navy to duty in the Light-House Establishment	4,680,135.52
By customs officers, on account of witness' fees in steamboat investigations	346.46
By the Auditor for the State and other Departments on account of all the bureaus, offices, and services, from annual appropriations for the fiscal year ended June 30, 1904, appropriations for public works, and permanent indefinite appropriations	141,532.11
Total disbursements during the fiscal year	10,361,875.56

Recommendation is made that, as far as practicable, the disbursing offices authorized by law and now existing in some of the subordinate bureaus be consolidated with the disbursing office of the Department of Commerce and Labor. Such a consolidation will result in a saving of both time and expense in the examination of accounts and the payment of vouchers. The bookkeeping of the Department will be simplified and the exact status of accounts and balances of appropriations, including the balances of advances on requisitions, can be ascertained without difficulty, as the ledgers of the Department will show the disbursements from day to day.

Should consolidation be effected, the work of disbursing the appropriations of the Department and the several bureaus and offices thereof will come under the personal supervision of the Secretary.

ESTIMATES.

The estimates for the Department, submitted for the fiscal year ending June 30, 1906, have been prepared after a most careful consideration of the actual needs of the Department and its various bureaus, offices, and services. In the aggregate, there was a material reduction from the amounts first submitted by the bureaus, it being my desire to eliminate for the coming year all increases that might, without injury to the proper growth of any service, be postponed to a future time.

One of the items of increase in the estimates is the amount requested

for the proper organization of the Office of the Secretary. The original appropriations were insufficient to furnish the Secretary adequate assistance for the mere routine administration work necessarily connected with the conduct of the Department. The estimates for the Secretary's Office call for only four clerks in addition to those now employed, but of those now employed nine are on detail from various bureaus of the Department and should be returned to the offices to which they belong, where their services are required.

PLAN OF ORGANIZATION.

The organization of the Department has been conducted along lines in harmony with the appropriations authorized by Congress for the current fiscal year. In some instances the work has been hampered by reason of an insufficient force of employees, and it is hoped that Congress will remedy this difficulty.

SPECIAL INVESTIGATIONS.

In the estimates I have included a provision for an appropriation to be expended under the immediate direction of the Secretary for the investigation of trade conditions at home and abroad, with the object of promoting the domestic and foreign commerce of the United States, and for other purposes. A similar request, made in the first annual report, was denied by Congress, but the result of the year's work conclusively demonstrates that the main investigation contemplated will be of great value to the commercial interests of the country. The growth of our foreign trade can be materially and immediately helped by sending skilled and trained men to study and report upon special conditions in the great world markets.

In addition to the main purpose the appropriation is needed also "for other purposes." It is of the utmost importance that a fund be available for expenditure under the immediate direction of the Secretary for the employment of special agents for the inspection and examination of the services of the Department. On account of the limitations which the law very properly imposes with reference to the expenditure of funds, it is impossible, without such a fund, to promptly meet such emergencies as frequently arise.

Money appropriated for contingent expenses, or for a special or general purpose, can not be used for official or clerical compensation, and executive officers are prohibited from employing help beyond provision made by law. Usually the annual appropriations are barely sufficient to enable the bureaus and offices to dispose of routine work, and provision is seldom, if ever, made for emergency work. The situation which arose in connection with the *General Slocum* disaster is in point. In that instance the Department had no funds which could

lawfully be used to provide either for a reinspection of the passenger steamers in the port of New York or for a general investigation of the service. Yet both the inspection and the investigation were necessary.

I am informed that for years a "division of special agents" has been maintained in the Treasury Department. These special agents are available for detail on any subject of investigation or inspection connected with the Department, and in the main are detailed to report on the work of the branches of the public service outside of the District of Columbia. Of the 7,610 employees of the Department of Commerce and Labor outside of the District of Columbia, 6,754 are connected with bureaus and offices formerly under the jurisdiction of the Treasury Department. In order to continue the efficiency of these services, it is imperative that provision be made for special investigations and inspections either as herein recommended or as maintained while the branches of the service referred to were part of the Treasury Department.

PERSONNEL OF THE DEPARTMENT.

On November 10, 1904, there were in the Department 9,210 regular positions. Of these, 1,812 were specifically authorized by law, and 7,398 were provided for under general appropriations that do not create specific positions.

Persons employed temporarily under general appropriations, except 14 persons engaged on the Philippine census, 50 persons paid from the unexpended balance of the twelfth census appropriation, and 650 special agents engaged in the collection of the statistics of cotton production, are not included in these figures. This class of temporary employments is very large in some of the bureaus; for instance, under the law (act of March 3, 1899, sec. 8, amended, 30 Stat. L., 1015) requiring a decennial census of statistics relating to special classes, more than 6,000 special agents have been employed for various periods during the present calendar year in the Bureau of the Census. There are also employed in that Bureau 8 special agents for the collection of the statistics of the quinquennial census authorized in section 9 of the act of March 6, 1902, that are not included in the above total of 9,210.

Temporary laborers and mechanics employed under the engineers of the various light-house districts are also omitted. During the present calendar year 1,174 employments of this character have been authorized. In the Bureau of Fisheries, from January 1 to August 31 of this year, there have been employed for various periods more than 1,500 spawn takers, hatchery attendants, laborers, etc. These have also been omitted. Smaller classes of temporary employees, omitted by reason of payment from a general appropriation, are as follows:

Ten special agents in the Bureau of Corporations, 25 employees in the Immigration Service at large, 6 in the Coast and Geodetic Survey, and 2 in the Bureau of Fisheries.

The accompanying table shows the positions under the Department by bureaus, offices, and services, whether statutory or otherwise, and their distribution within and outside of the District of Columbia. In this table the entire personnel of the Office of the Secretary and of the Bureaus of Corporations, Manufactures, Labor, Statistics, and Standards is treated as within the District of Columbia. In the cases of the Light-House Establishment, the Bureaus of Immigration and Navigation, and the Steamboat-Inspection Service the figures show the persons actually serving within and outside of the District. In the Bureau of Fisheries all station employees, except those at the central station at Washington, employees at large, distribution employees, two local agents in the division of statistics and methods of the fisheries, and employees in the vessel service are treated as outside. In the Coast and Geodetic Survey the crews of vessels, and in the Bureau of the Census the cotton-gin agents, are treated as outside. It will be observed that of the 9,210 positions under the Department 1,600 are in the District of Columbia and 7,610 outside.

Bureau, office, or service.	Statutory positions.	Positions not statutory (lump appropriations).	In the District of Columbia.	Outside the District of Columbia.
Office of the Secretary	125	.....	125	.....
Bureau of Corporations	47	15	62	.....
Bureau of Manufactures	12	.....	12	.....
Bureau of Labor	80	20	100	.....
Light-House Establishment	36	5,246	36	5,246
Bureau of the Census	664	729	743	650
Coast and Geodetic Survey	220	94	257	57
Bureau of Statistics	61	2	63	.....
Steamboat-Inspection Service	166	46	7	205
Bureau of Fisheries	290	.....	84	206
Bureau of Navigation	22	53	22	53
Bureau of Immigration	18	1,193	18	1,193
Bureau of Standards	71	.....	71	.....
Total	1,812	7,398	1,600	7,610
In the District of Columbia				1,600
Outside the District of Columbia				7,610
Grand total				9,210

PURCHASE OF SUPPLIES.

Stationery and supplies for the entire Department in Washington, with the exception of supplies that are purely technical—such as scientific instruments and apparatus—and stationery for the entire service outside of Washington, have been purchased by the Secretary's Office during the past year at the best contract prices of the other Executive Departments, and for the coming year will be purchased under contracts which have already been made. Uniformity in the stationery and supplies used throughout the Department has been

insured and lower prices consequent upon wide competition and contracts for large quantities have been obtained.

Economy in clerical labor has resulted from consolidating in one division of the Department all the work relating to obtaining bids, making contracts, purchasing, issuing, and accounting for stationery and supplies. A further saving in this direction could be effected if the various contingent funds of the bureaus were consolidated into a single fund to be controlled by the Secretary's Office, thus doing away with the clerical work necessitated by the present cumbersome process of reimbursing the Department appropriation for contingent expenses from similar appropriations for those bureaus heretofore separately appropriated for.

PRINTING.

During the past year the Department has assumed the conduct of the relations of its bureaus (with the single exception of the Bureau of the Census) with the Government Printing Office, for the purpose of promoting promptness and uniformity in its printing and of securing accuracy and completeness of its records. A central editorial force has been organized, which, in cooperation with the editorial forces already employed in a number of the bureaus, will endeavor to secure more uniform excellence of form and expression in the Department publications.

In addition to its many other publications the Department has issued series of circulars and of decisions on appealed cases, which have been printed immediately upon their preparation so as to place them as promptly as possible in the hands of persons interested.

A history of the Department and its various bureaus and offices, including the acts under which they were organized and are conducted, has been published.

BOOKS AND BLANKS.

The transfer of certain bureaus from the Treasury Department to this Department necessitated the division between the two departments of a great number of blank forms formerly used in the Treasury Department. This division involved the settlement of a number of difficult questions of departmental jurisdiction, and a joint commission was appointed by the Secretary of the Treasury and the Secretary of Commerce and Labor to determine the proper assignment and use of the forms in doubt. The work of this commission is now nearly completed.

The transfer of these bureaus also necessitated the preparation of a number of new forms. Many forms have been consolidated, thereby eliminating unnecessary ones and reducing the cost of printing.

A new catalogue of the numerous forms now used in the Department is being prepared. In the course of its compilation the forms are being revised in the interest of uniformity and simplicity, making possible a more systematic classification. All these forms are now distributed by a single division of the Department, and thus the work is greatly simplified.

During the past year there have been printed and sent out to the various services of the Department over four and one-quarter million blanks and 75,000 books and pamphlets.

TELEGRAPH AND TELEPHONE SERVICE.

The Department has installed an efficient telegraph and telephone service. The question of reducing the cost of this service is being carefully considered in connection with the service in the other Departments, to the end that there may be obtained the greatest degree of efficiency with the least possible expense.

BUREAU OF MANUFACTURES.

The Bureau of Manufactures, authorized under the organic act, was not organized during the fiscal year covered by this report because of the insufficiency of the appropriations.

BUREAU OF CORPORATIONS.

The work of the Bureau of Corporations has proceeded along the lines indicated in the first annual report of the Department.

The Bureau has made exhaustive examination of judicial decisions for the purpose of ascertaining fully those constitutional powers and restrictions on which present conditions are based, and also those which must be necessarily involved in any future legislation for the improvement of present legal corporate conditions.

For the purpose of ascertaining and presenting in available form the legal conditions under which corporate business is being carried on in the various States material obtained from thirty States has been compiled and tabulated. In each of these States, with regard to all the more important corporations organized in the State and engaged in interstate or foreign commerce, typical either of the State's industries or of its laws, every paper or document filed or recorded concerning each corporation was examined separately, and all information relating to each corporation disclosed by the official records has been collected and compiled. There have been thus far examined and abstracted the records of over 1,500 corporations, which include the larger part of the more important industrial and commercial corporations, joint-stock companies, and corporate combinations in the United States.

At the same time there has been collected the fullest possible information concerning the various systems of corporate taxation in use; whenever possible, there have been obtained statements, reports, or returns of the more important corporations; and, in addition, there has been obtained a complete list of the foreign corporations admitted to do business in the particular State, this record showing the name, capital stock, and home State of each corporation. This record furnishes a convenient clew to corporations engaged in interstate commerce. The material now collected from twenty-five States on this subject is as follows:

First. Abstracts of the records of specific domestic corporations.
Second. Abstracts of the records of specific foreign corporations.
Third. List of foreign corporations admitted to the State to do business.
Fourth. Official forms of all corporate documents required or permitted to be filed.
Fifth. Transcripts of all records or returns used in connection with corporate taxation, taken from typical originals.

There is now ready for publication a compilation of the Federal and State statutes dealing with illegal industrial combinations—the so-called antitrust laws. This will afford complete information of such laws, showing in tabular and condensed form, so as to be readily available and easily comparable, their provisions, including the decisions thereunder and a digest and discussion of cases involving the common-law principles as to combinations in restraint of trade.

The compilation on a uniform outline of insurance laws has been undertaken and completed in ten States. The Bureau has been in communication with the insurance officials of all the States, and its agents have conferred with representatives of a large number of insurance companies, officers of boards of underwriters, and insurance agents, for the purpose of obtaining the best information possible upon both the legal and the business side of insurance.

Federal control or regulation of insurance raises at the outset the question whether insurance in any of its forms is interstate commerce. The decisions of the Supreme Court of the United States have established the legal proposition that fire, life, and marine insurance, in the forms presented to the court, are not interstate commerce. If this proposition be irrevocably settled, the powers of the Commissioner of Corporations in reference to insurance are merely to collect and compile such statistics and information as may be voluntarily furnished to him. It would be useless to simply duplicate the statistics already obtained by various State insurance officers.

The rapid development of insurance business, its extent, the enormous amount of money and the diversity of interests involved, and the present business methods suggest that under existing conditions insurance is commerce, and may be subjected to Federal regulation through

affirmative action by Congress. The whole question is receiving the most careful consideration upon both legal and economic grounds.

For the purpose of laying the foundation upon which direct investigations of special corporations can be intelligently conducted, the Bureau has compiled, from sources other than the corporations themselves, all available information regarding certain leading combinations. From a careful analysis of this material it has been possible to form preliminary judgments regarding the economic and financial practices and effects of combinations in general, and to determine the lines of further special inquiry. On the basis of this general study preliminary outlines of inquiries to be addressed directly to the companies are being prepared.

The results of the investigation of the beef industry, authorized by resolution of Congress, will be made the subject of a special report.

The increase in appropriations requested for the Bureau is based upon the actual cost of work hitherto done and the work now in hand or contemplated. It is most strongly urged that the appropriations be granted in the form requested, for the reason that the special character of the work makes it quite impossible to now determine accurately the kind and quality of services that may be required during the coming year. Much greater economy can be exercised in the work of this Bureau if the major portion of its appropriations is in a lump sum; and greater efficiency is possible, as specially qualified men can be temporarily employed for particular investigations.

BUREAU OF LABOR.

In the organic act establishing this Bureau it is stated that its general design and duties "shall be to acquire and diffuse among the people of the United States useful information on subjects connected with labor, in the most general and comprehensive sense of that word, and especially upon its relation to capital, the hours of labor, the earnings of laboring men and women, and the means of promoting their material, social, intellectual, and moral prosperity."

In accordance with the general design and duties referred to, the Commissioner of Labor is specially charged to gather information with reference to the cost of producing various articles, including the wages paid in the different industries, the hours of labor, and the comparative cost of living and kind of living. It is also made his duty to ascertain what articles are controlled by trusts or other combinations of capital, business operations, or labor, and what effect such trusts or other combinations of capital, business operations, or labor have on production and prices. Among other subjects, he is further charged to investigate the causes of and facts relating to all controversies and disputes between employers and employees which may tend to inter-

fere with the welfare of the people of the different States. He is also authorized to make special reports on particular subjects whenever required to do so or when he shall think the subjects in his charge require it.

The Commissioner of Labor reports that under these provisions of the law the Bureau has been engaged during the past year in the collection of data for its nineteenth annual report (for 1904) and in the preparation of that report. The annual report for 1903 related to the cost of living of workingmen's families and the retail prices of staple articles of food used by such families. The report for the present year relates to a subject closely allied—that of rates of wages and hours of labor—and is the result of an extensive investigation among the leading manufacturing and mechanical industries of the United States covering the period from 1890 to 1903, inclusive.

The investigation relating to this subject was designed to cover thoroughly the principal distinctive occupations in the leading industries belonging to this large industrial group in all sections of the country, with a view to securing data which should be entirely representative of conditions and show the trend of wages and hours of labor during the period covered. The force available for the prosecution of the work did not permit of the extension of the investigation to cover transportation, mining, agriculture, and the other great industrial groups. It was possible, however, with the force available to cover practically all of the leading manufacturing and mechanical industries, the number of industries covered being 67, while the data were secured from a total of 519 distinctive occupations in 3,429 establishments.

In addition to the preparation of the nineteenth annual report the Bureau has been engaged in the collection of material with reference to convict labor, which will form the basis of its twentieth annual report (the report for 1905). The collection of data for this report has been almost completed, and it is expected that the report itself will be submitted early in the coming year. This report will relate specially to the economic features of convict labor as employed in the penitentiaries, prisons, and jails of the United States.

Work will shortly be begun on the collection of data relative to strikes and lockouts in the United States, which will form the basis of the annual report for 1906. The sixteenth annual report, published in 1901, brought the facts relating to strikes and lockouts down to and including the year 1900. It is expected that the report for 1906 will cover the period from 1901 to 1905.

In addition to work on the annual reports of the Bureau, a portion of its force has been engaged, pursuant to resolution of the Committee on Labor of the House of Representatives, in the collection of data

which will form the basis of a report upon the bill (H. R. 4064) now pending in the House of Representatives entitled "A bill limiting the hours of daily service of laborers and mechanics employed upon work done for the United States or for any Territory or for the District of Columbia, and for other purposes."

The bimonthly Bulletin has been issued regularly every other month during the past year, and each number has contained, in addition to one or more special articles, timely data relative to agreements between employers and employees, digests of recent reports of State bureaus of labor statistics, digests of recent foreign statistical publications, decisions of courts affecting labor, and laws of various States relating to labor. Among the special articles published during the past year in the Bulletin are the following:

Labor Unions and British Industry.
The Annual Index of Wholesale Prices, Covering the Period from 1890 to 1903.
The Union Movement among Coal Mine Workers.
Child Labor in the United States.
Wages and Cost of Living (a summary of the eighteenth and nineteenth annual reports of the Bureau).
Building and Loan Associations in the United States.

The bulletin for September (No. 54) is devoted to a description of the exhibit of the Bureau at the Louisiana Purchase Exposition, and contains reproductions of the principal charts and photographs presented in that exhibit, together with the following series of papers relating more or less closely to the various features covered by the exhibit:

The Working of the United States Bureau of Labor.
Bureaus of Statistics of Labor in the United States.
Bureaus of Statistics of Labor in Foreign Countries.
The Value and Influence of Labor Statistics.
Strikes and Lockouts in the United States, 1881 to 1900.
Wages in the United States and Europe, 1890 to 1903.
Cost of Living and Retail Prices in the United States, 1890 to 1903.
Wholesale Prices in the United States, 1890 to 1903.
Housing of the Working People in the United States by Employers.
Public Baths in the United States.
Trade and Technical Education in the United States.
Hand and Machine Labor in the United States.
Labor Legislation in the United States.
Labor Conditions in Hawaii.

A special report entitled "Labor laws of the United States," which revises and brings down to date the second special report of the Bureau, published in 1896, is now going through the press and will shortly be available for distribution. The eleventh special report, relating to restriction of output in the United States and Europe, is now in the hands of the printer. As the result of investigations in progress or

completed, reports on the following subjects will appear during the coming year, either in the Bulletin or in the form of special reports:

Coal-Mine Labor in Europe.
Street-Railway Labor in the United States.
Benefit Features of Trade Unions in the United States and Europe.
Labor Conditions in Australia.
Labor Conditions in the Philippine Islands.

LIGHT-HOUSE BOARD.

The insular possessions and dependencies of the United States are insistent in their demands either to have their light-house services taken over and administered by the Federal Government, or to have more and better aids to navigation in the form of light-houses, light-vessels, fog signals, and buoys. Provision has been made by which the Alaskan waters will be well supplied with necessary aids to navigation, except the small and inexpensive post lights, many of which are needed, but which can only be supplied by legislative sanction. These requirements are fully set forth in the annual report of the Light-House Board. The needs of Porto Rico are fairly cared for so far as is possible without a light-house tender built specially for those waters, for which an appropriation has been asked of Congress.

The Hawaiian waters have a mere skeleton of a light-house service, simply a frame to build upon, and the Light-House Board is, for lack of funds and legislative authority, scarcely able to maintain what it took over under Executive order. The needs of Hawaii in this respect, as stated by the Light-House Board in its annual report, are commended to the consideration of Congress. The needs of American shipping in the waters of Navassa, Guam, and the Midway Islands are beginning to assert themselves, and the Department is prepared to take up such burdens as Congress may devolve upon it for the safeguarding of commerce in those waters.

The Department respectfully calls attention to the fact that owing to the want of sufficient appropriations it was unable to make needed repairs, to retain its full force of keepers, or to man and put into operation certain of its newly-built light-houses. The following statement made in its annual report of last year is renewed:

> The Department invites attention to the need of meeting the estimates for the maintenance of the Light-House Establishment with full appropriations. The amounts asked are urgently required. Any diminution of them will retard the operations of the establishment to just that extent. The increase in the number of aids to navigation since the last appropriations occasions the increase in the requirements of the establishment. The estimates have been carefully framed, and are based on an aggregate of items. Hence the reduction of the estimates will require the abandonment of items to the extent of the reduction.

The Department repeats its recommendations of last year as to light-house tenders and the establishment of two additional light-house districts, as follows:

Especial attention is invited to the several estimates for the cost of building light-house tenders. These vessels are the eyes and hands of the establishment. By and with them the quarterly inspections are made, the personnel of the establishment is kept up to its standard, the 1,550 light keepers are paid quarterly, supplies of oil, fuel, and other necessaries are delivered at the light stations, and repairs of old stations and the construction of new ones are made. The lack of sufficient light-house tenders has made it necessary to do certain work by contract which otherwise would have been done by employees of the Department with greater promptitude and at less expense. Attention is invited to the estimate for a light-house tender to be used in Porto Rican waters, especially as it will be necessary to use her in connection with the aids to navigation in Guantanamo Bay, Cuba, where the naval coal station has just been established.

The Light-House Establishment is now limited by law to 16 districts. The Light-House Board in its annual report has set out the need for two more districts, one to embrace Alaskan waters and the other to embrace Porto Rican waters, as well as the aids to navigation now in Guantanamo Bay, Cuba, and to be hereafter established there. The aids to navigation in Alaskan waters are now looked after by the inspector and engineer of the thirteenth light-house district, who have their headquarters at Portland, Oreg., or about 1,800 miles away from some portions of their work. This great distance makes it very difficult, and in some instances impossible, to give that careful supervision to the work which the interests of commerce and navigation require.

The establishment of a new district, with headquarters for the inspector and engineer near its center, will do much for the increased convenience and safety of the growing commerce in these waters. The aids to navigation in Porto Rican waters are now, and those in Guantanamo Bay will be, under the supervision of the inspector and engineer of the third light-house district, whose offices are on Staten Island, New York, some 1,500 miles away from this work. The establishment of a new district will enable the Board to place an inspector and engineer, say, at San Juan, P. R., where they would be within about 100 miles of their work in Porto Rican waters, and much nearer Guantanamo Bay than is now the case.

The estimates made for such special structures as are needed for the exhibition of lights required to make useful at night channels cut by legislative order seem to require special Congressional attention.

The Department urgently invites attention to the estimates for light-house structures for which authorized contracts have been made, and for the completion of which additional appropriations are required.

The estimates made for new light-houses, new light-vessels, new fog signals, and other proposed structures have in some instances been repeated from year to year. In every case the necessity for such work has been determined by careful examination after repeated demands therefor by commercial interests. The estimates, so I am informed, have been carefully made by the light-house inspectors and engineers, and thoroughly verified by the Light-House Board in its committees and by its executive officers. It remains for Congress to

decide whether the needs of commerce require immediate action upon these estimates.

BUREAU OF THE CENSUS.

The Director of the Census reports gratifying progress in the three main lines of work upon which the Bureau was engaged during the past fiscal year. These were special reports authorized by Congress, the tabulation of the Philippine census, and work assigned to the Bureau by the Department.

SPECIAL REPORTS.

The special reports in progress comprised inquiries concerning wealth, debt, and taxation, including statistics of municipal finance; defective, dependent, and delinquent classes; annual mortality; blind, deaf, and dumb; social and financial conditions in cities; electrical industries, and cotton statistics. Preparation has been made for the manufacturing census of 1905.

The report upon wealth, debt, and taxation is one of the most difficult and important which the Bureau is called upon to prepare. No previous inquiry upon these subjects has been entirely successful, due largely to the pressure of work in connection with the main inquiries of the census. The postponement of this report until after the completion of the census proper was one of the wisest provisions of the act for taking the Twelfth Census; it has given the Bureau ample time for a most complete presentation of the financial operations of the nation. The task of securing comparable statistics was exceedingly difficult, and in order to complete satisfactorily the decennial inquiry authorized by Congress it was necessary for the Bureau to take the lead in a movement looking to greater uniformity in the accounting methods of municipalities. Several cities have made changes in their systems of accounting in order to conform wholly or in part to the classification adopted by the Bureau.

The representatives of the Bureau have met everywhere with the hearty cooperation of local officials. It is probable that the annual census reports upon municipal finance for cities of 30,000 population and over will prove the most influential factor in securing the adoption of uniform classification, thus materially lessening the cost of compiling census statistics upon this subject, increasing the accuracy of the returns, making comparisons possible, and encouraging reforms in the public service.

Two special reports have been undertaken as essential to a full valuation of property. One of these, relating to the valuation of railroad properties, properly apportioned to the several States and Territories, has been undertaken in cooperation with the Interstate Com-

merce Commission. The other relates to the par and market values of the negotiable securities of the country. This report will cover an entirely new field of Federal statistical investigation.

Satisfactory progress has been made upon the inquiry concerning defective, dependent, and delinquent classes, and reports are now being received from 5,441 special agents, who are the bookkeepers or wardens of the institutions under review, and who furnish transcripts of their records for a nominal compensation. The report will cover the movement of population in all these institutions for the calendar year 1904; its completion can therefore hardly be looked for during the fiscal year 1905.

The annual reports on mortality in registration areas, authorized by section 7 of the census act, have been delayed in compilation owing to the fact that the statute fixed the compensation to be paid for the transcription of registration records at so low a figure that it proved impossible to secure complete and satisfactory performance of the service. Congress was accordingly asked at its last session to amend the law, but the amendment did not become effective until April 27 last.

Four reports relating to electrical industries have been completed. These cover electric railways, electric light and power plants, municipal electric fire-alarm and police-patrol systems, and telegraphs and telephones. Advance bulletins concerning all of these subjects have been issued, and it is planned to publish them in permanent form in the near future. Together they present a complete account of the remarkable development of the electrical industry in its application to public utilities.

The annual canvass of the cotton ginners of the Southern States, taken for the purpose of ascertaining the size of the crop during the progress of the picking, was made last year with results highly gratifying from the point of view both of accuracy and of the promptness with which the information was given to the public. There will be six canvasses during the coming year showing the amounts of cotton ginned to September 1, October 18, November 14, December 13, 1904, January 16, 1905, and the end of the season.

The Bureau has been actively engaged in the preparation necessary for the census of manufactures for 1905, authorized by section 8 of the census act. It is planned to collect a considerable percentage of the schedules by correspondence, and a copy of the schedule will be mailed to every manufacturer in the United States whose existence is known, in advance of the actual canvass by districts. In the field work it is proposed to utilize the clerical force of the Bureau, so far as possible, thus avoiding the necessity of appointing untried and untrained special agents to superintend the canvass. In accordance with the authorization contained in the act of Congress approved

March 1, 1904, the Director of the Census cooperated with the State of Michigan in taking the census of manufactures of that State, to be utilized in the Federal census of manufactures in 1905. This cooperation with State officials in statistical work resulted most satisfactorily. Arrangements have been made for similar cooperation with State officials in a number of States, in taking the census of manufactures.

PHILIPPINE CENSUS.

The most important work performed during the past year, in addition to work on the special reports, has been the tabulation of the census of the Philippine Islands. The schedules were received by the Bureau September 25, 1903, and the completed tables for population, agriculture, manufactures, vital statistics, and much other data were placed in the hands of the Director of the Philippine Census at intervals during the first six months of the present calendar year; the last of the tables will be completed and delivered in October. The greater part of the tables and text of the Philippine Census reports are now in press. It is expected that they will make four volumes of approximately 700 pages each. The regular clerical force of the Bureau was utilized upon this work, but during a period of three months, while the work was at its height, about 150 temporary clerks were employed to expedite the punching of cards.

MISCELLANEOUS WORK.

The Bureau has lately completed the tabulation of statistics concerning the executive civil service of the United States, and has published this information as Census Bulletin 12. The information presented in this bulletin is important and interesting. Accurate information regarding the personnel of the executive civil service can be secured only by compilations of this character, and there will undoubtedly be a demand for it at stated intervals. The Bureau of the Census should be authorized to compile a similar bulletin at intervals of two, four, or six years.

In the preparation of the decennial census tables showing the birthplace of the foreign-born population, the Bureau of the Census cooperated with the Bureau of Immigration and tabulated immigration statistics upon punched cards, thus bringing within the reach of the latter Bureau much information from the alien manifests hitherto untabulated. It is highly desirable to secure legislation by which the alien emigration as well as immigration can be statistically measured.

The original schedules of the twelve decennial censuses of the United States from 1790 to 1900 are now in possession of the Bureau of the Census, having been transferred from the Department of the Interior to the Census building in June last, under the act of Congress approved January 12, 1903. The population schedules of the Twelfth Census

have been bound in 2,812 volumes. Thus, all the population schedules of all the censuses except the Eleventh are in condition for permanent preservation. The Eleventh Census was taken by family schedules, and there were thus nearly 13,000,000 schedules. Their bulk precludes binding them, as it is estimated that they would form 30,000 volumes. The vaults of the Census building have been made fireproof, and contain the population schedules for all the censuses except the Eleventh.

The Director of the Census recommends that the Government shall compile and publish the names of the heads of families in the original thirteen States as returned at the census of 1790, and expresses the opinion that this material would occupy about 2,500 printed pages, or two volumes, of which an edition of 5,000 copies would not exceed $35,000 in cost. He believes that much of this expenditure would be repaid to the Treasury by sale of this work, which is much in demand by patriotic organizations and individuals.

During the past year the Bureau of the Census has published, or prepared for publication, ten bound volumes and twenty-three bulletins and pamphlets.

Sufficient time has now elapsed to justify the conclusion that the establishment of a permanent Census Bureau was wise legislation, not only for the main reasons advanced in the debates which led to the enactment of the law, but for other reasons which have developed as the work of the permanent office has progressed. During the past year it has been made clear that cooperation with State and municipal authorities in connection with the secondary inquiries, in securing population statistics for intercensal periods, and particularly in securing greater uniformity in statistical work, has opened so many new opportunities for usefulness that the existence of the Bureau of the Census is more than justified.

The Director of the Census states that the experience and efficiency of the clerical force of the Bureau have steadily improved. He has established the policy of transferring clerks in large numbers from one division to another, as the pressure of work demands. Incidentally this has greatly increased the familiarity of the clerks with different classes of work, and fits them for valuable service in connection with the next census. The lack of expert assistance in training and directing clerks was recognized by Congress at the last session, and the number of chiefs of division was increased from four to eight. The total number of employees in the clerical and field force of the Bureau is now 712.

TABULATING APPLIANCES.

During the year a new contract has been negotiated, with my approval, by the Director of the Census, for the use of the electrical tabulating apparatus successfully employed in the Eleventh and

Twelfth censuses. It is intended to utilize this apparatus in the tabulation of the annual vital statistics, the annual immigration statistics, and in other current work of the Bureau. It has been definitely demonstrated that the application of mechanical appliances in large statistical undertakings enables work to be completed in at least one-tenth of the time required to do it by hand at about one-third the cost and with a marked increase in accuracy.

Indeed, it may fairly be said that the work of compiling a decennial census has grown to such enormous proportions, owing to the rapid growth of the country, that it is no longer possible to accomplish it within a period of time that will satisfy the country without the aid of mechanical appliances. The law under which the Twelfth Census was taken required the four main reports—on population, vital statistics, agriculture, and manufactures—to be completed and published within two years from the date of the enumeration. The Director of the Census informs me that it would have been physically impossible to complete the compilation of the first three of these branches in less than four years without the aid of the mechanical appliances that were employed.

For the rental of these patented appliances, and for the cards, punches, and other necessary accessories, there was paid the sum of $428,239.61, in connection with the Twelfth Census proper. This sum represents nearly 4 per cent of the total cost of that census, and while it also represents a very large saving, as compared with the cost of doing the same work by hand, I am nevertheless convinced that the Government ought to take the steps necessary to a material reduction in the cost.

Something has already been accomplished in that direction by the Director of the Census, whose new contract for the rental of these machines has been negotiated on the basis of a reduction of approximately 25 per cent from the rentals paid at the Twelfth Census. But even at this reduced rate, he estimates that the use of the tabulating machinery at the Thirteenth Census will cost the Government not less than $720,000.

It is plain that some system of mechanical tabulation is permanently required in connection with census work, and I deem it equally plain that it would be greatly to the advantage of the Government to own a system, instead of depending upon a private company for the use of patented machinery. It is my belief that the way is open for the development of a new system, and that there is ample time to perfect it before the Thirteenth Census is under way. Experimental work in that direction can be carried on in the Bureau of the Census in connection with its current work and at comparatively small expense. The success of such experimental work will mean in the end a large

saving of money to the Government. It is therefore hoped that Congress will grant the appropriation for this experimental work which is asked for in the annual estimates.

COAST AND GEODETIC SURVEY.

The amount appropriated for the Coast and Geodetic Survey for the fiscal year 1904, exclusive of the allotment for printing and binding, was $968,025, of which $210,245 was for manning and equipping the vessels of the Survey, $120,000 for building a new vessel, $38,100 for repairs and maintenance of vessels, and $50,000 for office expenses. The remainder of the appropriation was about equally divided between expenses of parties in the field and salaries of the field and office forces.

The Superintendent of the Coast and Geodetic Survey reports that hydrographic surveys were made in 16 States and Territories, and topographic surveys in 9, that triangulation was done in 14, and leveling in 6. The field work necessary for a revision of the two volumes of the United States Coast Pilot covering the coast from Point Judith, R. I., to Chesapeake Bay entrance, was completed.

The primary triangulation along the ninety-eighth meridian and along the Pacific coast north of San Francisco was continued.

The determination of the difference of longitude between San Francisco, Honolulu (Hawaii), Midway Island, Guam Island, and Manila (Philippine Islands), by the telegraphic method, using the Commercial Pacific cable, was completed, making a most satisfactory closure of the longitude circuit around the globe.

In Alaska a survey was made of Davidson Inlet, work was continued in Prince William Sound, and the survey of Kiska Harbor was begun.

The director of coast surveys in the Philippine Islands, an officer of the Coast and Geodetic Survey (with a detail of assistants), in cooperation with the insular government, has continued the important work of charting the imperfectly known waters of the archipelago. The largest vessel belonging to the Survey was engaged on this duty during the past fiscal year. Detached surveys based on astronomic determinations and including base measurement, triangulation, topography, hydrography, and tide observations were made at various points, and a connected triangulation already extends over the greater portion of the west coast of Luzon Island north of Manila Bay. A few additional telegraphic longitudes were determined; magnetic and tide observations were continued. Fifteen new charts were prepared and published at the Manila suboffice, and two volumes of sailing directions were published (revised editions of Sections I and II).

Good progress was made in the general magnetic survey. Observations were made at 345 stations, in 23 States and Territories, including Alaska, Guam, Hawaii, Philippine Islands, and Porto Rico.

Magnetic observations were also made at séa while the vessels of the Survey were en route to their various stations. Magnetic observatories were maintained at Cheltenham, Md.; at Baldwin, Kans.; at Sitka, Alaska; at Honolulu, Hawaii; and in Porto Rico. Special observations were made at the observatories during the year on the 1st and 15th of each month, in order to cooperate with foreign observatories in international magnetic work in connection with the observations made by the expeditions to the Antarctic regions.

Continuous tide observations with self-registering gauges were made at 8 stations, including 1 station in Hawaii and 1 in the Philippine Islands.

The Superintendent attended the Fourteenth General Conference of the International Geodetic Association at Copenhagen, Denmark, as the delegate of the United States. He continued the work of re-marking the boundary line between the United States and Canada, from the Rocky Mountains westward, as commissioner of the United States, and two officers of the Survey were detailed for fieldwork in this connection. The Superintendent and one officer were detailed to report to the United States agent at London, England, for duty in connection with the presentation of the case of the United States to the Alaska Boundary Tribunal, and performed that duty. He also, as the commissioner of the United States on the International Delimitation Commission, inaugurated the work of marking the boundary between Alaska and Canada as laid down by the Alaska Boundary Tribunal, and one officer was detailed for field duty on this work. One officer continued on duty as a member of the Mississippi River Commission.

BUREAU OF STATISTICS.

The foreign commerce of the United States as reported by the Bureau of Statistics shows a larger total than in any earlier year. While the exports were surpassed by those of a single year, 1901, and the imports were also surpassed by those of a single year, 1903, the aggregate of imports and exports for the year is greater than that of any preceding year in the history of our commerce. The imports of the year were $991,087,371 and the exports $1,460,827,271, making the total foreign commerce of the year $2,451,914,642, which exceeded by $6,053,726 the high record established by the year 1903. The imports showed a reduction of $34,631,866 as compared with 1903, but exceeded those of any other year, and the exports were $26,937,720 below those of 1901, but exceeded those of any other year. Of the $1,460,827,271 of exports, $1,435,179,017 were of domestic production, the exports of products of agriculture being $853,643,073 and of manufactures, $452,415,921.

The total of agricultural products exported fell $19,679,809 below that of the preceding year and formed a smaller percentage of the total domestic exports than in any preceding year, while exports of manufactures were the largest ever recorded, exceeding by $44,889,762 those of the preceding year and surpassing by $18,564,165 the high record established in the year 1900. Manufactures formed, in 1904, 31.52 per cent of the domestic exports of the country, against 21.14 per cent of those of 1894, 18.81 per cent of those of 1884, and 14.58 per cent of those of 1874. The reduction in exports of agricultural products already noted was chiefly due to the small exportations of breadstuffs, which amounted during the year to $149,050,378, against $221,242,285 in the year 1903. This reduction, which occurred in all classes of breadstuffs, but especially in wheat, was due in part to a shortage in the wheat crop of the United States in 1903 as compared with that of the immediately preceding year, in part to unusually large crops in other wheat-producing countries, and in part to the growing home demand.

The imports of the year were characterized by the maintenance of the high record of manufacturers' materials in a crude condition brought into the country for domestic use. They aggregated $306,524,755 in value, against $126,643,273 in 1894, $138,496,741 in 1884, and $85,095,889 in 1874.

Our commerce with all of the various parts of the world shows a steady and satisfactory growth. To Europe the total exports amounted to $1,057,930,131, exceeding by $28,673,474 those of 1903, and by $49,896,150 those of 1902. To North America the total exports amounted to $234,909,959, exceeding by $19,427,190 those of 1903, and being much larger than those of any earlier year. To South America the total exports were $50,755,027 in value and exceeded those of 1903 by $6,617,155, and were also greater than those of any other year. To Asia and Oceania the total exports of the year were $93,202,028, a reduction of $2,625,500 as compared with 1903, due apparently to the temporary disturbance in trade conditions incident to the hostilities in Asia. The chief reduction occurs in the exports to China, which amounted to but $12,862,432 in the year 1904, against $18,898,163 in 1903 and $24,722,906 in 1902.

The value of the commerce of the United States with its noncontiguous territories—Porto Rico, the Hawaiian Islands, the Philippine Islands, Guam, Midway, Tutuila, and Alaska—was $103,562,804 in the year 1904, including in that statement $6,328,524 of gold received in the United States from the mines of Alaska. The value of the total shipments of merchandise from the United States to all of these noncontiguous territories was $38,096,528, and of the merchandise received from them $59,137,752. The sales to these territories consisted

chiefly of manufactures, breadstuffs, and provisions, and the merchandise received from them, sugar, tobacco, hemp, and other tropical products from the islands, and furs, canned salmon, and other products of the fisheries from Alaska.

The value of merchandise shipped to the United States from Porto Rico in 1904 was $11,722,826, against $2,181,024 in 1897; and the shipments from the United States to Porto Rico, $11,210,060 in 1904, against $1,988,888 in 1897. The value of merchandise shipped from Hawaii to the United States in 1904 was $25,157,255, against $13,687,799 in 1897; and that of the shipments from the United States to the Hawaiian Islands in 1904, $11,683,393, against $4,690,075 in 1897. The value of merchandise received from the Philippine Islands was $12,066,934 in 1904, against $4,383,740 in 1897; and the value of merchandise shipped from the United States to the Philippines was $4,832,900 in 1904, against $94,597 in 1897.

The Bureau of Statistics, which presents the record of the foreign commerce of the United States, reports a remarkable increase in public interest in the foreign and internal commerce of the country and in the trade opportunities offered by the markets of the world. The transfer to the Bureau of Statistics, by the act creating the Department of Commerce and Labor, of the duty of publishing the commercial reports of the consular officers of the United States, and the privilege of calling for information especially relating to the foreign and domestic commerce which it records, has largely increased the field of its operations.

In addition to the monthly statements of imports and exports formerly issued, the Bureau now publishes a daily bulletin containing reports from the consular officers of the United States, a semiweekly statement of commercial information for distribution to the press, and monthly as well as annual statements of imports and exports by articles and countries. A monthly statement relating to the internal commerce of the United States is also prepared and published, comparing movements in the leading products forming the internal and foreign commerce of the country with those of earlier years, and much valuable information is thus given to those interested in the production, transportation, and domestic consumption of the country, as well as to those interested in its foreign trade.

These studies of the internal commerce of the country include details of the movements upon the Great Lakes by articles and ports, the concentration at the great interior ports of the leading articles of domestic commerce and their redistribution from those centers, and certain data regarding the coastwise commerce of the United States. It is the desire of the Department, however, to enlarge this work, especially that relating to the coastwise commerce on both the Atlantic and the Pacific coasts.

In place of establishing a Division of Foreign Tariffs, as proposed in the first annual report, Congress made an appropriation of $3,500 for use during the fiscal year 1905, to enable the Bureau of Statistics, under the direction of the Secretary of Commerce and Labor, to collate and arrange the tariffs of foreign countries in form for distribution. These tariffs will be printed in the English language accompanied by a statement showing the equivalent in currency, weights, and measures of the United States of all foreign terms of currency, weights, and measures used in such tariffs. The reports of the International Bureau for the Publication of Customs Tariffs will be utilized so far as practicable. The Bureau has entered upon this work and it is believed the publication of this information will prove valuable to those engaged in foreign commerce.

The Bureau has also published preliminary editions of the Statistical Abstract of the World, authorized by Congress, showing the imports and exports of each country of the world and the countries from which their respective imports are drawn and to which their exports are sent.

A special report on manufactures in the foreign commerce of the United States has also been published, showing the share which manufactures have formed of the imports and exports, respectively, in each year from 1800 to 1904, the value of each principal class of manufactures exported, and all countries to which each class or group of manufactures was sent during the decennial period; also the importation of materials for use in manufacturing, by classes, and the countries from which each class is drawn.

STEAMBOAT-INSPECTION SERVICE.

It is the duty of the Steamboat-Inspection Service to inspect hulls, boilers, machinery, and appliances, and examine the qualifications of officers, engineers, and pilots of certain classes of vessels, for the general purpose of protecting the safety of life and property concerned in traffic upon the public waters of the United States. The details of the regular work of this Service for the fiscal year ended June 30, 1904, as reported by the head of the Service, are as follows:

EXPENSES.

The expenses of the Steamboat-Inspection Service during the fiscal year ended June 30, 1904, were, for salaries, $316,379.16, an increase over the previous year of $10,452.46; for contingent expenses, $68,647.65, an increase over the previous year of $4,830.55.

The increase in salaries was due in part to the appointment during the year of two additional inspectors at the port of New York, and two additional inspectors at the port of Philadelphia, Pa., and to the appointment near the close of the last fiscal year of two additional inspectors at the port of Norfolk, Va. These appointments were made

necessary by the exigencies of the service. The increase was also caused to some extent by an increase in the salaries of four clerks, made on the recommendation of their superior officers, on the ground of increase of work and meritorious service.

There was an increase of $6,389.14 in the amount paid for rent of offices, due to the necessity of the Service in New York vacating its offices in the post-office building and securing offices in the Whitehall Building at No. 17 Battery place.

The net increase in expenditures of the contingent expenses, including rents, etc., was only $4,830.55, and except for the large increase in the amount paid for rent, there would have been a decrease of over $1,500 in the contingent expenses of this year.

INSPECTION OF VESSELS.

There were inspected during the fiscal year ended June 30, 1904, 375 foreign passenger steamers, aggregating 1,821,880 tons; 8,196 domestic steamers, aggregating 3,545,526 tons; 206 gasoline and other motor vessels, aggregating 9,391 tons; and 524 sail vessels and barges, aggregating 607,926 tons.

The total number of vessels inspected was 9,301, aggregating 5,984,723 tons. Thirty-two of these vessels, with 12,389 gross tonnage, were inspected in Hawaiian waters, and 10 steamers, with 3,555 gross tonnage, were inspected in Porto Rican waters. Inspection of vessels in Hawaii and Porto Rico is made by inspectors detailed, under the authority of the Secretary, from various local districts.

There was a decrease of 25 in the number of vessels inspected during the fiscal year ended June 30, 1904, from that of the previous fiscal year, but there was an increase of 447,920 in the gross tonnage.

OFFICERS LICENSED.

There were 7,939 officers of all grades licensed during the fiscal year. The act of Congress approved May 28, 1896, extended the term of license to officers of steam vessels from one to five years, and the number licensed during the intervening years of the five-year period (1897–1902) are new licenses or licenses in raise of grade.

Of 1,694 applicants examined for color blindness 40 were rejected.

INSPECTION OF STEEL PLATES.

Under the act of Congress approved January 22, 1894, 3,765 steel plates for use in construction of marine boilers were inspected at the various mills by United States assistant inspectors detailed for that purpose. Of this number 386 were rejected for various defects. In addition to the inspection of these plates, there were inspected a large number of bars for stay and brace bolts of marine boilers, and many

tests were made at the request of various Departments of the Government service of material for boilers of Government vessels and for public buildings.

CASUALTIES.

The number of lives lost from various causes during the fiscal year was 1,303, the largest perhaps in the history of the Service, but the number of accidents was fewer; the great loss of life being due principally to six disasters, namely, the stranding of the steamer *South Portland*, on Cape Blanco, Oregon, on October 19, 1903, by which 19 lives were lost; the foundering of the steamer *Discovery* off the southeastern coast of Alaska, about November 1, 1903, with a loss of 30 lives; the foundering of the steamer *Clallam* in the Straits of San Juan de Fuca, on January 8, 1904, by which 50 lives were lost; the fire on board the steamer *Queen* off the coast of Oregon, on February 27, 1904, when the lives of 14, who embarked in the lifeboats, were lost by the staving and capsizing of the boats; the explosion of the boilers in the steamer *Fred Wilson* at Louisville, Ky., on May 26, 1904, with a loss of 11 lives; and the burning of the steamer *General Slocum* in East River, New York, on June 15, 1904, by which disaster 957 persons perished.

DISASTER TO THE STEAMER GENERAL SLOCUM.

On June 15, 1904, the passenger excursion steamer *General Slocum* was burned in the harbor of New York, with a loss of 957 lives. The appalling nature of this disaster, together with certain features attendant thereon, called for immediate and special action by the Department, and on June 23, 1904, there was appointed the United States Commission of Investigation upon the Disaster to the *General Slocum*. This Commission was made up as follows: Lawrence O. Murray, Assistant Secretary of Commerce and Labor, chairman; John M. Wilson, brigadier-general, U. S. Army, retired; Cameron McR. Winslow, commander, U. S. Navy; Herbert Knox Smith, Deputy Commissioner of Corporations, Department of Commerce and Labor, secretary; and George Uhler, Supervising Inspector-General, Steamboat-Inspection Service, Department of Commerce and Labor.

The Commission was instructed to make a thorough investigation into the disaster, to consider such other matters bearing upon the safety of passenger traffic upon the navigable waters of the United States as might be brought to its attention by such investigation, and to make a report thereon, accompanied by recommendations for such departmental or legislative action as it might deem necessary. On July 19, 1904, the Commission began its formal hearings in New York City. Twenty-three days were devoted to the taking of testimony in that city, and forty-two days to the preparation and digesting of the

same and the completion of the report. On October 11 the report was submitted to the President, and was published on October 17, together with a letter of the President thereon and the report of the Department of Justice showing the status of the criminal proceedings taken in connection with the disaster.

This investigation by the Commission revealed a very unsatisfactory condition of the Steamboat-Inspection Service in the port of New York and resulted in the removal of the supervising inspector for the second district and the local board of inspectors for the port of New York. The report of the Commission found that the methods of inspection in the port of New York and of the officials since removed were largely responsible for the disaster. The report also called attention to a number of defects and recommends changes in existing statutes and regulations relating to the Service. There is urgent need that the laws relating to the Service be strengthened and improved in accordance with the recommendations. In view of this fact attention is respectfully directed to the report and recommendations of the Commission and the accompanying letter of the President.

By order of the Secretary, there was also carried on during the months of July, August, September, and October, 1904, a reinspection of the passenger steamers in the port of New York by inspectors from other ports detailed for that purpose. This reinspection was had both for the immediate object of securing proper conditions in that port and also as a part of the work of the Commission in ascertaining the conditions existing there at the time of the disaster. The results of the reinspection were incorporated in the report of the Commission.

In pursuance of the letter of the President, the Board of Supervising Inspectors of the Steamboat-Inspection Service was convened in Washington on October 25, 1904, in special session, for the purpose of revising the rules and regulations of that Service. This work is not yet completed. Also, in pursuance of that part of the letter of the President which directs a further investigation of the Service in continuation of the investigation by the Commission, officers of the Navy have been detailed to make investigation in respective districts, as follows:

First district, Rear-Admiral Louis Kempff.
Third district, Commander Z. L. Tanner.
Fourth district, Rear-Admiral John R. Bartlett.
Eighth district, Rear-Admiral Wells L. Field.
Ninth district, Rear-Admiral F. M. Symonds.
Tenth district, Rear-Admiral W. C. Wise.

I very much regret to say that while on duty in this work Rear-Admiral John R. Bartlett died at St. Louis on the morning of

November 22, 1904. Request will be made that another naval officer be detailed to take his place in this investigation.

Upon completion of the work in the said districts, the remaining districts, to wit, the fifth, sixth, seventh, and that part of the second not included in the port of New York (which has already been considered by the Commission) will also be investigated.

These officers are now engaged upon the work assigned to them and upon completion of their work, a report will be made summarizing the conditions as found in the entire Steamboat-Inspection Service.

In closing this branch of the report I desire to express my appreciation of the work of the Commission. While the report shows that sixty-five days were consumed in the taking of evidence, the digesting of the same, and the preparation of the report, it does not show the time actually consumed in the conduct of the investigation. Some of the members of the Commission during the investigation worked on an average fifteen hours a day. Three of the members were officers of the Department of Commerce and Labor, one a retired army officer, and one an officer of the Navy on the active list. No extra compensation was paid them for their services. The clerical force detailed to assist in the carrying on of the investigation, especially the stenographers, at times worked all night in order to have the evidence ready the next day for the consideration of the Commission. This work was also done without extra compensation. The total cost of the investigation, including rent of rooms in New York, subsistence, and traveling expenses of the Commission and clerical force, was only $1,044.61.

BUREAU OF FISHERIES.

The Commissioner of Fisheries reports that the year 1904 was one of the most successful in the history of the Bureau, considered with reference to the operations of the hatcheries. The results attained in all branches have been satisfactory, and the outlook for greatly augmented work is very favorable.

The efforts of the Bureau on behalf of the fisheries are yearly becoming more generally appreciated, and a desire to actively cooperate with the Bureau has been manifested throughout the country by all persons directly or indirectly interested in the promotion of fishing as a business or as a pastime. The sums voted annually for expenditure through this channel represent only about 1 per cent of the annual value of our fisheries; the preservation of some of the most important of these is now largely dependent on the Bureau's operations, and it is easily demonstrable that in pursuing a liberal policy for the promotion of the fishing industry Congress is simply making an investment that yields returns far greater than those which attend private business enterprises.

FISH PROPAGATION.

The total number of fish distributed in fresh and salt waters of the country exceeded one and one-quarter billions, an output which has been equaled by that of only a single previous season (1902). The conditions attending the hatching of such a large number of fishes necessitate the planting of most of them in the form of fry, but increased attention has been given to the rearing of important species, and the output of adult, yearling, and fingerling fish was nearly 50 per cent larger than in any previous year.

The importance of the Bureau's fish-cultural operations, however, must not be gauged by the results during any one year, but by the average for a series of years, as peculiar seasonal conditions often materially modify the work of particular stations, sometimes favorably, more often unfavorably, and give an erroneous impression as to its extent. It usually happens that a year which is characterized by a greatly diminished yield of certain fishes is also signalized by an augmented output of others, so that the aggregate distributions remain normal. This point, which has frequently been commented on, was exemplified anew in 1904, when an exceedingly poor season for shad and whitefish was offset by the largest collections of eggs of Pacific salmon and flatfish ever known.

An important feature of the work of artificial propagation, which has often been referred to but can not be too strongly emphasized, is that an exceedingly large percentage of the young fish hatched annually are from eggs taken from fish that have been caught for market, and hence would be totally lost were it not for the efforts of the Bureau. To the many hundred millions of young food and game fishes thus produced must be added many more millions resulting from the superiority of artificial propagation over natural propagation in the matters of fertilizing and incubating eggs and of safety of the young.

The aggregate output in 1904 of 1,267,343,025 was divided as follows: Fertilized eggs, 263,123,354; fry, 994,503,040; fingerlings, yearlings, and adults, 9,716,631. The eggs shown were for the most part donated to various States to be incubated in their own hatcheries, the resulting fry being planted under the direction of the State fishery authorities. It is worthy of remark, that while the Bureau makes ample provision for maintaining the supply of fishes caught chiefly by anglers, nearly 99 per cent of the fish handled are those which are the objects of commercial fisheries.

The demand and the local facilities determine the proportion of effort directed toward the cultivation of particular species. During the year salmon were propagated at 11 stations, whitefish at 7, lake trout at 5, shad at 4, pike perch at 3, cod at 2, flatfish at 2, striped bass, white perch, and yellow perch at 1 each, and the lobster at 2.

INVESTIGATIONS CONNECTED WITH THE FISHERIES.

Attention is invited to the important branch of the Bureau's work which deals with the biological questions that arise in connection with the economic fisheries and fish culture. It is particularly concerned with the exploration of lakes, streams, and salt waters; the study of the habits, growth, and distribution of fishes and other aquatic animals; the experimental cultivation of desirable products not now the objects of cultivation, with a view to developing methods that may be applied on a wholesale basis; the investigation of the diseases of fishes under cultivation and in a wild state, and the pollution of waters in its effect on fish life, and the encouragement of biological research in the Bureau's laboratories and field operations.

The special commission for the investigation of the salmon fisheries of Alaska concluded its labors in the fall of 1903, and shortly thereafter a preliminary report was submitted embodying the general results of the investigation and making recommendations for the protection and promotion of the fisheries. This report was presented to the President on January 21, 1904, and by the President transmitted to Congress on January 27, 1904. The most important recommendations of the special commission are the establishment of Government salmon hatcheries under the control of the Bureau of Fisheries, and the placing of all matters relating to the fisheries of Alaska under the direction of the Commissioner of Fisheries.

Among the numerous special subjects the Bureau has had under consideration with reference to economic questions are the oyster, sponges, the blue crab, the diamond-back terrapin, the green turtle, and various fishes. The experiments in the artificial fattening of oysters and the cultivation of sponges from cuttings have continued with satisfactory results. The raising of the diamond-back terrapin and the green turtle from the egg is receiving attention at points in Chesapeake Bay and on the coast of Florida. States in which inquiries have been made as to the fishery resources of particular waters are Maine, North Carolina, Indiana, California, and Arizona.

The collection of information with reference to the extent and condition of the fisheries, with a study of the methods, affords the only basis for determining the condition and trend of the commercial fisheries of the country; it forms an invaluable criterion of the necessity for and the results of fish-cultural operations of the Government and States and is indispensable in furnishing a basis for legislation.

General canvasses have been conducted in the New England, South Atlantic, and Gulf States, and the Hawaiian Islands. Special inquiries have been made into the condition of the vessel fisheries centering at Boston and Gloucester, Mass.; the Pacific cod and halibut fisheries, and the whale fishery centering at San Francisco; the fisheries of the

interior waters of Florida and the interior lakes and streams of New York and Vermont. Very complete canvasses have been made of the statistics and methods of the salmon industry of Washington, Oregon, California, and Alaska in conjunction with the work of the special salmon commission.

ALASKAN SALMON FISHERIES.

During the past year there has been a marked decrease in the salmon pack of Alaska in all grades. In 1902 the season's catch was 2,631,320 cases, in 1903, 2,631,782, and in the present year it will probably not exceed 1,935,000, a falling off in two years of 696,320 cases. Throughout the entire world there has been a large reduction of the pack of salmon, which, approximately, is only 2,810,000 cases for 1904 against 4,317,000 cases for 1902, a loss of 1,507,000 cases. These figures are not exact, as the detailed statistical reports required of the packers are not yet at hand.

Notwithstanding this decrease in the volume of the pack, there has been a marked increase in its aggregate market value, the receipts for 1903 having been about 30 per cent more than those of the preceding year, and from present indications a further increase will be shown this year.

The steady decrease in the salmon pack of Alaska is due to constantly enlarging operations of the packers beyond the natural resources of the streams, and to unfavorable conditions under which the propagation of salmon is carried on. The regulations promulgated by this Department under the law require that persons engaged in taking salmon shall maintain suitable artificial propagating plants or hatcheries, and shall produce yearly and plant in the natural spawning waters of each fishery so operated red salmon fry in such numbers as shall be equal to at least ten times the number of salmon of all varieties taken from the said fishery during the preceding year. Despite the safeguards which have thus been thrown about the salmon industry by the law and the regulations, and by the personal inspection given by the agents of the Government, the supply of fish, as has been noted, is apparently steadily decreasing. It has been found impracticable to enforce adequate artificial propagation by private parties. I therefore urge the favorable consideration by Congress of the estimates which have been submitted for the establishment of salmon hatcheries under the direct supervision of the Department.

This need for artificial propagation was touched upon in the Department's last annual report, and the condition which has been presented would seem to strongly commend to the Congress the wisdom and necessity of immediate action. Very much more than the amount which has been asked for in the estimate has been paid into the Treas-

ury through the operation of the law taxing salmon canners and salters. The sum collected from this source will not be less, probably, than $75,000 for the current year, and in the past has exceeded $100,000 in a single year.

ALASKAN FUR-SEAL SERVICE.

The agents who, under the law, are charged with the management of the seal fisheries and with certain duties in connection with the care of the native inhabitants of the Pribilof Islands have furnished the Department with interesting details of the work done during the past year.

Last spring, in view of the steady diminution of the seals on the rookeries, and with the object of keeping an ample reserve of breeding bulls, the Department adopted measures for exempting from the killing 2,000 of the young male seals of killable age. These measures were carried out in an effective manner during the past season. The quota of skins to be taken by the lessee company was also reduced from 30,000, allowed in the preceding year, to 15,000 for the current year.

Especial care was also observed by the Government agents in collecting information respecting the seal life, more especially that bearing upon the diminution of the herd.

SEAL CATCH OF 1904.

As a result of the sealing operations for the year ending with August, 1904, 13,128 skins were taken and shipped, of which number 11,132 were obtained on St. Paul Island and 1,996 on St. George Island, as against a total of 19,292 skins taken in 1903. The decrease in the number of skins taken, 6,164, was due largely to the reservation of young male seals, referred to above, and other restrictions upon the killing deemed necessary to preserve the life of the seal herd.

FOX RAISING.

An industry pursued incidentally with that of sealing on the Pribilof Islands is that of raising the blue fox for its pelt. These animals, under the system in use, are fed and cared for as if domesticated. The foxing industry is carried on under a lease with the sealing company. Last winter 471 skins were taken on St. George Island. The proceeds of the skins are applied to the support of the native inhabitants, whose services are availed of in the taking and curing of the pelts.

CARE OF NATIVES.

The reports further indicate that the physical comfort of the natives, as well as their education and general welfare, have been carefully looked after by the agents in charge. The schools for native children

have been conducted on each island; places of worship have been kept up, and the observance of good order maintained generally.

BUREAU OF NAVIGATION.

The Commissioner of Navigation reports that the documented merchant shipping of the United States at the end of the fiscal year comprised 24,558 vessels of 6,291,535 gross tons, the largest tonnage in our history. Less than one-sixth of this tonnage is registered for foreign trade. During the past four years, however, our registered steam tonnage has increased 212,314 gross tons, while our registered sail tonnage has decreased 140,740 gross tons. American shipping in foreign trade has thus become more efficient, and in the past fiscal year American ships carried 10.3 per cent of our exports and imports, compared with 9.3 per cent in the year ended June 30, 1900. The upward tonnage movement of the last four years now seems to have been checked.

For the first time since 1812 a fiscal year has passed without the completion of a single square-rigged vessel in the United States. The United States shares in the general decline of sailing vessels, and the opportunities for their employment in the foreign trade grow steadily less. The completion of the Panama Canal will greatly curtail even present opportunities.

Training on sailing vessels, so I am informed, is regarded as an almost indispensable qualification of the deck officer of a steamer. If we are to have a merchant marine the lack of officers will be felt as soon as steam tonnage in foreign trade increases. The subject is mentioned now for the consideration of Congress in the future.

Contracts made several years ago have been performed, and our principal steel shipyards on the seaboard are building very few seagoing steel steamers except warships for the Navy. Indeed, were it not for Government work under appropriations by Congress some of them would now be closed for want of work and others soon would be. The stoppage of these large plants and the scattering of their trained workmen would be more than an ordinary industrial misfortune. These plants are a necessary part of the system of national defense, and when they shut down and their men are dispersed the cost of warships is accordingly enhanced.

The Government program of naval construction, if executed through further appropriations by Congress, will help to keep the yards busy, but it will not alone suffice. The situation reinforces all the arguments which of late years have been advanced in support of a definite and durable legislative policy for the promotion of the American merchant marine. I have not deemed it necessary or wise to consider this subject at length in this report, however, for the

reason that its importance has already been recognized by executive and legislative action. The Commission appointed by Congress at its last session, on the recommendation of the President, has doubtless given the subject the fullest consideration, and will report at the coming session of Congress.

TONNAGE TAX.

Tonnage taxes during the year amounted to $826,023.01, a decrease of $59,818.32 compared with the previous year. The reasons for the decrease are shown in the report of the Commissioner of Navigation, to which the attention of Congress is invited. That report also furnishes detailed information on the matters just considered and suggests changes in the laws and in methods of their enforcement.

REMISSION OF PENALTIES

One of the duties transferred from the Secretary of the Treasury to the Secretary of Commerce and Labor by the act of February 14, 1903, is the consideration of applications for the remission of fines, penalties, and forfeitures incurred for violating any provision of law relating to vessels or seamen. The power of remission was first bestowed upon the Secretary of the Treasury by the act of May 26, 1790, after the first acts of Congress in imposing penalties on vessels, their owners, and masters had been in operation less than a year.

From time to time the power has been extended as statutory obligations upon shipping have increased. Acts authorizing remission or mitigation and acts imposing penalties must be read together in executing the will of Congress. During the past fiscal year 706 applications for remission or mitigation of penalties, incurred for the violation of 64 sections of the Revised Statutes, or of acts passed since the revisions, have been acted upon by the head of the Department, after review by the Bureau of Navigation.

The report of the Commissioner of Navigation shows the ports from which these violations have been reported, the statute alleged to have been violated, and in many cases the nature of the offense. The papers in these cases would fill a volume of about 1,200 printed pages or more. As each case involves the exercise of a discretionary power on facts and conditions differing from nearly all other cases, the action taken can be fully understood only by the publication of all the papers in each case. The summaries in his report give a fair idea of the scope of the exercise of the remission power during the first year of its bestowal upon the Secretary of Commerce and Labor.

UNITED STATES SHIPPING COMMISSIONERS.

United States shipping commissioners stationed at 20 seaports during the past year superintended the shipment, reshipment, and discharge of 201,273 seamen for American vessels. The offices of

these commissioners should be inspected at least once a year. Such inspection was formerly made from time to time by special agents of the Treasury Department at the request of the Bureau of Navigation. These inspections could be made at the time customs-house inspections were made without extra cost. It is not clear how the inspection can be made and paid for at present in the absence of an appropriation which can be used for that purpose. During the year efforts to suppress crimping, especially at southern seaports, have been more successful than usual.

BUREAU OF IMMIGRATION.

The important work of this Bureau is fully and ably considered by the Commissioner-General of Immigration in his report for the fiscal year ended June 30, 1904. The statements, tables, and statistics submitted by him show that for the year the total of arrivals of aliens at ports of the United States was 812,870, exclusive of 27,844 admitted for the purpose of passing through the United States to foreign territory. Of these arrivals 30,374 entered through ports of Canada, 10,742 entered ports of the insular possessions of the United States other than those of the Philippine Islands, and 771,754 were admitted at seaports of the United States. More than one-half of the entire immigration was composed of the Italian, Hebrew, Polish, Slovak, and Magyar races. There were decreases in arrivals of 37,326 from Italy, 28,885 from Austria-Hungary, and 5,704 from Japan. There was an increase of 18,643 from Great Britain, and approximately of 100 per cent from China. Of the total arrivals 549,100 were males and 263,770 were females. As to age, 109,150 were 14 years old or under, 657,155 were between 14 and 45, and 46,565 were 45 or over. The records show 3,953 as able to read but not to write, and 168,903 as illiterate, leaving a remainder of 640,014 who, it is assumed, could both read and write. The total amount of money shown by the arrivals was $20,894,383, or about four and one-half millions more than the aggregate amount brought by the larger number of alien arrivals of the preceding year. There were denied admission at seaports of the United States as members of the various classes excluded by law 7,994 aliens, and 779 previously admitted were deported upon the ground that they were in the country in violation of law.

There are confined in public and private charitable, penal and reformatory institutions in this country a total of 44,985 aliens; of these, 20,485 are in insane asylums, 9,825 are confined for the commission of crimes, and 14,675 are dependents—upward of 25,000 of these aliens will be confined for life. The burden of maintenance in this connection is distributed in accordance with the ratio of alien residents in the different sections of the United States, the State of New York alone caring for

nearly 6,000 insane aliens. During the year the Department considered 1,178 appeals from decisions of boards of special inquiry at the various ports. Of these 517 were sustained, 660 dismissed, and 1 withdrawn.

Attempts are frequently made to introduce into the United States a large number of aliens under what is known as the padrone system. During the year there arrived at the port of Boston several shiploads of Greek lads, amounting to 898, many of whom were mere children. In accordance with the provisions of law, 127 of them were returned. Officers of the service detailed to make investigations in foreign countries report widespread solicitation and encouragement of aliens to emigrate to the United States. Persistent efforts have also been made to import alien miners and skilled workmen in other lines.

Notwithstanding the fact that during the year fines aggregating $28,400 have been paid by the transportation companies, they continue to disregard the provisions of the law aimed to prevent the bringing of diseased aliens to ports of this country. In this connection it is important to note that the medical inspection conducted at Yokohama and Nagasaki, Japan, from September 22 to the end of the year, through the offices of the Public Health and Marine-Hospital Service, resulted in the detection of nearly 1,300 aliens afflicted with dangerous contagious diseases who were attempting to embark from those ports.

As the result of the adoption of suitable regulations the violations of the immigration law by alien seamen have practically ceased. Seamen who are discharged or desert from their vessels are now examined as other aliens.

The structures maintained at the different ports of entry for the accommodation of aliens detained pending examination have been materially improved, but it will be necessary to make further improvements and build new structures. This is especially true at the port of San Francisco, where, in addition to aliens generally, the bulk of Chinese immigrants apply for admission.

THE CHINESE EXCLUSION LAWS.

Signal success has marked the administration of the Chinese exclusion laws during the year. This is especially true in relation to the enforcement of the law along the Canadian boundary. An agreement has been reached whereby the transportation lines deliver directly into the hands of the United States officers for examination Chinese brought by them through Canada to the United States. If rejected they are returned to China at the expense of the companies.

During the year the Supreme Court decided that applicants who claim the right of admission as American citizens on the ground of alleged birth in the United States are required to first submit the evidence upon which they base their claims to administrative officers in

accordance with the regulations of the Department. As a result of this decision, 321 out of a total of 412 applicants have been returned to China at the expense of the transportation companies.

The issuance of duplicate certificates of residence has been requested in 476 cases by Chinese laborers who profess to have lost the originals. The Department is in possession of information that 340 certificates of residence have been pledged to pawnbrokers.

During the year 792 registered laborers departed from and 1,392 returned to the United States; of 2,106 seeking the privilege of transit all except 26 were admitted for that purpose; and of 1,721 Chinese persons arrested for being unlawfully in the United States, 783 were deported. The Department considered 282 cases of appeal from the excluding decision of officers at ports of arrival, of which 101 were sustained and the remainder dismissed.

By authority of the act of April 29, 1902, the Department promulgated regulations admitting Chinese to take part in the Louisiana Purchase Exposition, their departure at the close of the exposition being assured under bonds in the penalty of $500 in each case. These regulations of the Department have been improperly charged with excluding merchant exhibitors or visitors. Attention is called to the fact that the regulations relate to laborers only, and do not exclude merchant exhibitors or visitors. The law and the treaty secures to visitors and merchants the right to enter at all times.

COST OF THE IMMIGRATION SERVICE.

The cost of the immigration service during the year was $1,296,808.85, exclusive of the sum of $239,743.01 expended in the construction of new buildings, improvements, alterations, the enlargement of Ellis Island, the building of the ferryboat, etc. The balance of $1,389,403.08 on hand at the close of the fiscal year is $112,920.39 in excess of the balance on hand at the corresponding period last year. There was also expended $75,536.10 for deporting Chinese, an average cost of $112.24 for each deportation. Of the total appropriation of $500,000 for the enforcement of the Chinese exclusion acts, $432,220.96 was expended for salaries and expenses, including the cost of deportation, and for miscellaneous items, leaving on hand at the close of the fiscal year a net balance of $67,779.04.

LEGISLATION RECOMMENDED.

New legislation is again recommended. Provision should be made for the distribution of aliens in accordance with views heretofore expressed by this Department; for the physical inspection of aliens by officers of the Public Health and Marine-Hospital Service stationed at the ports of foreign embarkation; for the establishment of a moral and manual standard for admissible aliens; for the compilation of data

in regard to the annual departures of aliens from the United States; for the registration of all Chinese lawfully resident in the United States at this time, thus furnishing them with certificates which will afford them immunity from arrest, and for placing restrictions on the right of judicial officers to release Chinese persons on bail.

It is also recommended that a treaty arrangement be made which will authorize the location in China of Department officers to discharge duties now performed by American consular officers. The effect of this would be to transfer the investigation, now conducted in part at ports of arrival, to the homes of Chinese applicants in China, where it should be possible to make such examination as would establish conclusively the status of any applicant. This would leave for determination upon arrival at a port of the United States only the identity of any examined Chinaman with the person described in the certificate presented by him.

BUREAU OF STANDARDS.

The Director of the Bureau of Standards reports that the work of the Bureau has been rapidly developing during the fiscal year just closed. Notwithstanding the fact that the work is still carried on in temporary quarters in several buildings, a large amount of testing and research has been completed. The Mechanical Laboratory has been occupied for several months, and the increased space thus made available has enabled the Bureau to extend the range of its work. The Physical Laboratory will probably be ready for occupancy during the month of October.

During the year many new lines of testing have been organized and are well under way. The volume of testing has greatly increased. The standards and measuring instruments tested during the year aggregated 7,756, being 400 per cent greater than during the previous fiscal year. Work has been done for practically all departments of the Government, for State sealers, scientific institutions, electrical companies, manufacturers of mechanical standards, thermometers, weights and measures, and for the general public. The scientific staff has also given much attention to the designing of apparatus and standards for the various kinds of testing. Much of this apparatus has been constructed in the instrument shop of the Bureau, under the personal supervision of the specialists concerned.

The exhibit of the Bureau of Standards at the Louisiana Purchase Exposition is an educational and historical presentation of the general subject of standard weights, measures, and measuring instruments; in several cases the work of testing is shown. An increasingly important service rendered by the Bureau has been the dissemination of accurate knowledge concerning weights and measures and the various kinds of

measurement. The large number of inquiries indicates a widespread demand for such information. Seven circulars descriptive of the lines of testing which the Bureau is prepared to undertake have been issued during the year. The publication of a series of bulletins which will embody the results of the investigations, researches, and other work of the Bureau of importance to the scientific, technical, and manufacturing interests of the country will soon be inaugurated. A considerable amount of research concerning fundamental problems connected with fixing the standards and determining methods of measurement has already been completed and prepared for early publication.

In the important branch of the Bureau's work which is devoted to standards of length, mass, and capacity, the work of testing has grown steadily. More than 1,600 instruments were tested by this section during the year. The United States prototype meter was compared with the international meter at Paris by the associate physicist in charge of this work. A convention of State sealers has been planned, and methods of calibrating volumetric apparatus decided upon. Plans were also developed for standardizing time-measuring instruments, a work which will soon be inaugurated.

Under the supervision of the Bureau an examination of the weights and measures and methods of measurement used in the various custom-houses has been made. The results of this work have added to the efficiency and accuracy of that branch of the service. Weights and measuring instruments have been tested at the Bureau and distributed to the various custom-houses, provisional limits of tolerance have been fixed, and a plan for systematic inspection is being developed.

In the measurement of temperature the Bureau is rendering important service to thermometer and pyrometer makers and to the various industries which require such apparatus. The hearty cooperation and active interest accorded this work have done much to facilitate the efforts of the Bureau to establish a uniform scale of temperature. More than 5,300 thermometers and other temperature measuring instruments have been tested during the year. A laboratory for pyrometer testing has been equipped with the necessary apparatus for this work, and an investigation of the various types of high temperature measuring instruments has just been completed.

The optical work has included a study of polariscopic methods of sugar analysis for the Customs Service, and some important experimental and theoretical work in connection with the conduction of electrical discharges through gases, the results of which will soon appear.

The testing of engineering instruments, organized during the year, has made satisfactory progress. An investigation of the screw threads of fire-hose couplings now in progress reveals a chaotic condition of the standards used in the important cities and a great need for the adoption of standard couplings.

Work has been done by the chemical staff in the preparation of standard specifications for the purity of chemical reagents, a subject of vital importance to the chemical interests of the country, and in the planning of the equipment of the laboratory; valuable assistance has been rendered to the other sections of the Bureau.

The electrical work of the Bureau was transferred during the year to the new Mechanical Laboratory. This work has included the calibration of resistance and standard cells, the determination of inductances and capacities, the testing of electrical instruments, and photometric work. Although this work has but recently been organized, 167 electrical standards and measuring instruments and 589 incandescent standard lamps have been tested. Researches have been conducted especially with reference to the development of more refined methods of electrical testing. Some of the results of these investigations have been presented at the International Electrical Congress, and details will soon be published by the Bureau. The laboratory of the Bureau in the Electricity Building of the Louisiana Purchase Exposition was a working exhibit of the process of standardizing electrical instruments and standards as conducted at the Bureau.

WIRELESS TELEGRAPHY.

The Inter-Departmental Board appointed by the President to consider the entire question of wireless telegraphy in the service of the National Government has recommended that the Department of Commerce and Labor should have the duty of issuing licenses for wireless telegraphic marine stations in special cases, under such regulations as will prevent interference with stations necessary to the national defense. It has also recommended that all private stations in the interior of the country should be under the supervision of the Department of Commerce and Labor. To prevent the control of wireless telegraphy by monopolies or trusts, the Board deems it essential that any legislation on this subject should place the supervision of it in the Department of Commerce and Labor.

The proposed Federal control of telegraph stations using wireless apparatus must, of course, be within constitutional limits. The recommendations of the Inter-Departmental Board, in so far as they concern this Department, have been referred to a board of the Department's officers. Should that board submit a legislative project on the subject which meets the approval of the Department it will be transmitted to Congress.

CONCLUSION.

The foregoing report deals with the work of the fiscal year 1903–4, during which time the Department was presided over by my predecessor in office. None of the matters referred to or discussed in the

report came under my personal supervision, and for that reason I have had to rely almost entirely, in the preparation of the report, upon the heads of bureaus and chiefs of divisions of the Department.

I find that the work of organizing the Department has been as thorough and complete as was possible under the available appropriations, and that the men who have been selected to fill the important staff positions are especially efficient and in every way qualified for the performance of the important duties of their offices. The credit for the organization of the Department is due, in my judgment, to the first Secretary, the Hon. George B. Cortelyou, whose great executive ability and thorough familiarity with governmental matters enabled him in so short a time to organize and equip a Department of the Government which promises so much for the future development of the commercial and industrial interests of the country.

V. H. METCALF,
Secretary.

PAPERS

ACCOMPANYING

THE REPORT OF THE SECRETARY OF COMMERCE AND LABOR.

REPORT OF THE DIRECTOR OF THE CENSUS.

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF THE CENSUS,
Washington, October 15, 1904.

SIR: I have the honor to submit the following report upon the operations of the Bureau of the Census for the last fiscal year. The report covers the first year under the supervision of the Department of Commerce and Labor, and the second year of the existence of the Bureau of the Census as a permanent office under the act of March 6, 1902.

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JUSTIFICATION OF THE ESTABLISHMENT OF THE PERMANENT CENSUS BUREAU.

Sufficient time has now elapsed to justify the conclusion that the establishment of a permanent Census Office was wise legislation, altogether apart from the main arguments which led Congress to enact the law. These arguments were that it would permit of careful and scientific study of the main and secondary results of the decennial enumerations; that it would keep together a corps of experts, trained and competent to prepare for and take the Thirteenth Census, and sufficiently familiar with the methods and scope of previous censuses to insure close comparability and greater accuracy in the results; and that it would create a central office, exclusively devoted to statistical investigation, in which many statistical inquiries now carried on in bureaus not specially equipped for such work could gradually be concentrated.

VALUE OF CENSUS BUREAU PUBLICATIONS.

Much has already been accomplished along these lines. The list of publications of the Bureau of the Census for the last fiscal year, Appendix C, shows a number of supplementary statistical reports, analyzing and interpreting the results of the Twelfth Census, in directions that heretofore have been neglected, for lack of time and opportunity to consider them. Other studies, of equal interest and importance, are in progress or are contemplated. These studies in many instances deal with data hitherto untabulated. They possess a sociological value hardly less than that which attaches to the main census results. Their presentation places the census of the United

States in the first place among the censuses of the world; for no other country has as yet been able to carry its interpretative analysis as far as this Bureau is now doing. This achievement possesses special significance when the practice in previous census work is recalled. It long has been the custom in the United States to secure census information considered essential by all civilized nations, and in addition to obtain on the schedules material not included in foreign census inquiry, yet heretofore the interpretation of basic material has been inadequate and no analysis whatever of most of the remaining information has been attempted, although the cost of obtaining it was often very large.

PREPARATION FOR THIRTEENTH CENSUS.

This work is the most effective preparation for the Thirteenth Census. It lays bare the errors and sources of error in the last enumeration, and affords every facility for guarding against their recurrence. In order that the best possible utilization of the opportunity may be made, your predecessor appointed a special advisory commission on the recommendation of the Director of the Census, whose duty it will be to make a thorough study of all the conditions surrounding census work in this and other countries, and to prepare a report for the guidance of Congress in enacting legislation for the Thirteenth Census. This committee, with which the Director of the Census will act, consists of Hon. Carroll D. Wright, of the Bureau of Labor; Prof. Walter F. Willcox, of Cornell University; Dr. Henry Gannett, of the United States Geological Survey; Prof. Davis R. Dewey, of the Massachusetts Institute of Technology and Mr. John Hyde, of the Department of Agriculture—all of them trained students of the theory and technique of modern statistics and interested in raising the statistical work of the United States to the highest standard. This commission will also advise with the Director of the Census as to the current work of the Bureau, in order to aid him in the effort to bring that work to the highest standard of modern scientific statistical inquiry. It plans to meet at stated intervals, and to obtain suggestions and criticisms from students in all lines of statistical investigation.

COMPILATION OF THE PHILIPPINE CENSUS.

The practical usefulness of the Bureau of the Census as a part of the permanent organization of the Government is shown again by the character of the work of the Bureau, in addition to that specifically assigned to it by law. Most important has been the compilation and publication of the census of the Philippine Islands, assigned to the Bureau by the proclamation of the President, dated September 30, 1902, in accordance with the provisions of section 6 of the act of Congress approved July 1, 1902, entitled "An act temporarily to provide for the administration of the affairs of civil government in the Philippine Islands," and in compliance with the request of the Philippine Commission. The schedules of the Philippine census were received in this Office on September 25, 1903; and the complete tables for population, agriculture, manufactures, and vital statistics, and much other data, have been placed in the hands of the director of the Philippine census at intervals during the first six months of the year, the last of the tables being transmitted on October 19, 1904. The

work of compiling the population statistics was under the supervision of Mr. William C. Hunt, chief statistician for population.

The final results of the Philippine census will be printed in four octavo volumes, of approximately 700 pages each. These volumes are now passing through the Government Printing Office, under the supervision of the technical expert of this Bureau, and their publication may be looked for prior to March 1, next.

In the compilation of the Philippine census, the regular clerical force of the Census Bureau was utilized exclusively, except for a period of three months, during which 150 temporary clerks were employed in order to expedite the punching of the cards.

STATISTICS OF THE EXECUTIVE CIVIL SERVICE.

By order of your predecessor, dated October 8, 1903, the Bureau of the Census has compiled the statistics of the executive civil service of the United States, and the results have recently appeared as Census Bulletin 12. These statistics were collected, pursuant to the Executive order of March 31, 1903, in connection with the preparation of the biennial Official Register by the Secretary of the Interior, and they have been presented in accordance with a scheme formulated by the Civil Service Commission. They show the sex, nativity, age, character of appointment, State from which appointed, length of service, salary, character of work, and place and office where employed of the 150,383 employees of the Federal Government. The data presented are important and interesting. Accurate information regarding the personnel of the executive civil service can be secured only by compilations of this character, and there will undoubtedly be a demand for it at stated intervals. The Official Register is published biennially; and as much of the information collected for it can be utilized for statistical purposes, the Bureau of the Census should be authorized to compile a similar bulletin at intervals of two, four, or six years. The Census is the only Bureau of the Government equipped to make this compilation; and it is respectfully suggested that it will tend to economy and unity of work if the compilation of the Official Register should at the same time, and by amendment of the act of Congress approved January 12, 1895, be transferred from the Department of the Interior to the Bureau of the Census, in order that work so intimately related may be simultaneously carried on.

STATISTICS OF IMMIGRATION COMPILED IN COOPERATION WITH BUREAU OF IMMIGRATION.

By a similar order of the Secretary of Commerce and Labor the statistics of immigration for the year 1903–4 have been compiled by the Bureau of the Census in cooperation with the Bureau of Immigration. These statistics will hereafter be compiled in harmony with the decennial census tables, showing the birthplace of the foreign-born population. Thus an obvious statistical unification has been brought about. In the compilation of the immigration statistics the punched card has been used, and much information from the alien manifests, hitherto untabulated, is thus brought within reach.

In this connection I desire to repeat my recommendation of last year, in which the Commissioner-General of Immigration has joined, that Congress be urged to enact legislation by which the alien emigra-

tion as well as immigration can be statistically measured. There can be no accurate record of the changes effected in the character of our population by immigration, without the corresponding details of emigration. The number of these returning immigrants is large, reaching many thousands a year; and until it is officially ascertained we can not hope to bring the statistics of immigration into conformity with census statistics of the foreign born.

RATES OF WAGES COMPUTED FOR THE SPECIAL REPORT OF THE BUREAU OF LABOR.

Also, by direction of the Secretary, a portion of the clerical force of the Bureau of the Census was employed for six weeks in computing rates of wages for a special report of the Bureau of Labor; the results demonstrated the great advantage, from the point of view of celerity in compiling and promulgating official statistics, which comes from the existence of a large central office, officered by trained experts, to which statistical work, whatever its technical character, may be transferred, by proper executive order, for quick handling. About one-quarter of the clerical force of the Bureau has been continuously occupied upon such work during the past year—work supplemental to that contemplated by the census act. In the interest of efficiency, expedition, and economy, it seems desirable that additional transfers shall be made in the future as occasion arises; and for such transfers, or for the preparation of statistical reports on any subject, there is ample authority under the provisions of the act establishing the Department of Commerce and Labor.

A GENERAL INFORMATION OFFICE.

The permanent Census Bureau is coming to be regarded as the general information office of the Government. The daily correspondence, covering inquiries on every variety of topic, is large, and steadily increasing. The rule of the Bureau is to supply the desired information, whenever possible, whether or not it relates to the specific work of the Census.

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PROPRIETY OF PUBLISHING THE RETURNS OF THE FIRST CENSUS.

In this connection I ask your attention to a request frequently made by the patriotic organizations of the country and by individuals, that the Government shall compile and publish the names of the heads of families in the original thirteen states, as returned at the census of 1790. Unfortunately the First Census schedules for Delaware, Georgia, Kentucky, New Jersey, Tennessee, and Virginia were burned at the time of the capture of Washington by the British, or have since been lost or destroyed; but the schedules still in existence—comprising Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, and Vermont—contain much information, ready access to which would be welcomed by students. This information would increase the general knowledge of the origin and distribution of the early population of the country. The population of the United States in 1790, excluding slaves, was returned as 3,231,533, of which number

824,713 resided in the States and Territories for which the schedules are missing, leaving 2,406,820 as the population enumerated on the schedules now in possession of the Bureau. I estimate that this population represents 401,134 heads of families, and that the desired information could be printed in 2,507 pages, at a cost, for printing and binding an edition of 5,000 in two volumes, of $32,570. I doubt if the Government can make a more substantial and welcome contribution to its own history for a like sum of money; and I recommend that Congress be asked to make a specific appropriation for this publication, much of which is certain to return to the Treasury from the sale of these volumes. If they are sold to the public at a price corresponding somewhat with their cost, it will insure their distribution only to those who will prize them and avoid the waste which so frequently attends the distribution of public documents.

ABSTRACT OF THE TWELFTH CENSUS.

Of the Abstract, which contains in an abridged form, without text, the more important results of the Twelfth Census, three editions have been published, of 25,000, 10,000, and 31,000, respectively, making a total of 66,000 copies so far issued. The demand for this volume continues unabated, showing that it meets the requirements of the great mass of the people for census information and justifies the continuance of its distribution free of cost.

THE CURRENT WORK.

The additional work, in various stages of progress, which has occupied the office during the year may be briefly summarized:

REPORT ON WEALTH, DEBT, AND TAXATION.

The report upon the wealth, debt, valuation, and taxation of the United States, by States, counties, and municipalities, authorized by section 7 of the act to establish a permanent Census Office, has continued chiefly to occupy the attention of the division of agriculture, under the charge of Mr. L. G. Powers, chief statistician. The field work for the report was completed during the month of May last. The preliminary report, covering the financial operations of the larger cities, will be ready for publication during the present calendar year.

This report is one of the most difficult and important the Census is called upon to make; and nothing heretofore attained in this field has been satisfactory. This has been due largely to the fact that the work was carried on simultaneously with the main census inquiries, and in the rush of that work could not receive the attention its technical character demanded. The postponement of this report until after the completion of the census proper was one of the wisest provisions of the act for taking the Twelfth Census; it has given the Bureau ample time and opportunity for a most complete presentation of the material resources and financial operations of the nation.

STATISTICS OF MUNICIPAL FINANCE.

The inquiry relating to municipal finance was one of the most noteworthy of the many extensions of census statistics undertaken at the Tenth Census. Since the publication of the information then secured,

increased attention has been paid to this class of Federal and State statistics, popular interest has been aroused, and this has led to a general and earnest demand for improvement in methods of municipal accounting.

The earlier statistics were more or less imperfect, because there was no common classification of municipal accounts and no uniform method of municipal bookkeeping. To encourage reform the National Municipal League arranged a classification of payments and receipts and recommended its general adoption. This was done experimentally by Baltimore, Md., Cambridge, Mass., and a few small cities, before the work of the Twelfth Census began. The Bureau of the Census adopted this classification with minor changes, and, in order to secure uniformity of results, prepared instructions for rearranging local statements of accounts. These instructions and the accompanying schedules have contributed appreciably toward uniformity in classification of accounts and methods of accounting.

CONFERENCE TO SECURE UNIFORMITY IN MUNICIPAL ACCOUNTING.

While these were steps in the right direction, so much diversity still existed that the task of securing comparable statistics was exceedingly difficult, and in order to complete satisfactorily the decennial inquiry authorized by Congress, it was necessary for the Census to take the lead in a movement looking to greater uniformity in the accounting methods of municipalities. Accordingly, in response to the invitation of the Director of the Census, a conference was held in November, 1903, at Washington, attended by a number of representative auditors, comptrollers, expert accountants, and other students of municipal problems. Interest in the subject of uniformity in classification and methods of municipal accounting received a decided impetus from this conference; minutes of the meeting were published in pamphlet form, and have been in much demand. During the past year the different phases of this problem have been actively discussed at sessions of the Commissioners on Uniform State Laws, the National Municipal League, the Congress of Public Accountants, the National Association of State Bank Supervisors, and the associations of the fiscal officers of the cities of Pennsylvania and Wisconsin. Many municipal officials have expressed a desire for a second conference under the auspices of the Bureau of the Census.

Several cities have made changes in their systems of accounting to conform wholly or in part to the classification adopted by the Bureau of the Census. Among these are New York City, St. Louis, Buffalo, Minneapolis, Atlanta, Houston, South Bend, and Lincoln. The State of Ohio has established for all its cities a uniform system of accounting in harmony with that of the Census schedules, so far as local laws permit. Cities in New York having less than 250,000 population are now required to make annual reports to the secretary of state of their payments and receipts. The State schedule prepared for this purpose is based upon that of this Bureau. Many cities have installed already, or have under consideration, improved accounting systems in harmony with the one above referred to. The representatives of this Bureau have met everywhere with the hearty cooperation of local officials.

It is probable that the annual Census reports upon municipal finance for cities of 30,000 population and over will prove the most

influential factor in securing the adoption of uniform classification, thus materially lessening the cost of compiling census statistics upon this subject, increasing the accuracy of the returns, making comparison possible between the itemized expenditures of cities of the same population, and encouraging reforms in the public service.

SPECIAL INVESTIGATIONS.

As outgrowths of the financial report, two special reports have been undertaken as essential to a full valuation of property. One of these, relating to the valuation of railroad properties, properly apportioned to the several States and Territories, has been undertaken in cooperation with the Interstate Commerce Commission, which has placed at the disposal of the Census all the data in its possession gathered from the railroad corporations since the organization of the Commission. The immediate supervision of this investigation has been placed in charge of Prof. Henry C. Adams, the statistician of the Interstate Commerce Commission, and Prof. Henry Balthasar Meyer, Ph. D., of the University of Wisconsin.

The second special investigation relates to the par and market values of the negotiable securities of the country. It has been placed in the charge of Mr. Charles A. Conant, of New York City. This report will cover an entirely new field of Federal statistical investigation, although for the past ten years similar statistics for most of the European countries have been collected. Its object is to ascertain not only the present par and market value of outstanding capital stocks, bonds, and debentures of all active corporations, but also the fluctuations in the value of such securities within a series of years. The data are found in published reports of the corporations and recorded selling prices of stock exchanges.

DEFECTIVE, DEPENDENT, AND DELINQUENT CLASSES.

Another pending investigation authorized by section 7 of the census act is that relating to the defective, dependent, and delinquent classes. This inquiry has been placed under the charge of Mr. John Koren, of Boston. Mr. William A. King, chief statistician for vital statistics, has general supervision of the work. Satisfactory progress has been made, and reports are now being received from 5,441 special agents, who are the bookkeepers or wardens of the institutions under review, and who furnish transcripts of their records for a nominal compensation. The report will cover the movement of population in all these institutions for the calendar year 1904; its completion can therefore hardly be looked for during the present fiscal year.

ANNUAL MORTALITY REPORTS.

The annual reports of mortality in registration areas, authorized by section 7 of the census act, have been delayed in compilation by a defect in the statute, which fixed the compensation to be paid for the transcription of registration records at so low a figure that it proved impossible to secure a complete and satisfactory performance of the service. Congress was accordingly asked at its last session to amend the law, but the amendment did not become effective until April 27 last. This amendment permitted the Director to fix a minimum com-

pensation of $25 for such transcriptions, and in his discretion, in other cases, to pay at the rate of 4 cents per name, instead of 2 cents, as provided in the original act. The average compensation fixed, under this amendment, does not exceed 3½ cents a name.

Further delay arose in connection with these mortality reports by reason of the fact that the force of the division was engaged in compiling the vital statistics of the Philippine Census. As soon as the latter work was completed the compilation of the mortality reports was resumed, and the statistics for the years 1900, 1901, 1902, and 1903 are now in process of compilation, and should be ready for publication during the current calendar year.

REPORTS CONCERNING BLIND, DEAF, AND DUMB.

The division of vital statistics is also engaged upon reports concerning the blind, deaf, and dumb, based upon data collected by the enumerators of the Twelfth Census. The statistical tables for these reports were completed some time ago. The preparation of the text and analysis of the tables was committed by my predecessor to Dr. Alexander Graham Bell, of Washington, and he is now engaged upon this work.

SOCIAL AND FINANCIAL STATISTICS OF CITIES.

Another investigation now in progress, authorized by section 7 of the census act and of the act of Congress approved July 1, 1898 (30 Stat. L., 546, p. 648), relates to the social and financial statistics of cities. The conditions leading to the transfer of the annual report for cities of 30,000 population and over from the Bureau of Labor to the Bureau of the Census, by the order of the Secretary of Commerce and Labor, were explained in the last report of the Director. The census reports for cities of less than 30,000 population are decennial only; but the two inquiries are so identical in character that there is obvious advantage in making them together, and accordingly the annual canvass of the larger cities required by law was postponed last year, by order of the Secretary, and the data for the years 1903 and 1904 are now being simultaneously collected. A field force of 100 clerks and special agents was assigned to this work at different dates in the months of July and August last, and it is expected that the data will all be in the Bureau during the month of November.

SPECIAL REPORTS TO BE INCORPORATED IN QUARTO VOLUME.

A sixth report, growing out of the original plans for the Twelfth Census, contemplates a general review, analysis, and correlation of the results of that census, under the direction of Prof. W. F. Willcox, of Cornell University, formerly one of the chief statisticians of the Twelfth Census. A number of the special studies of census results produced by this division, in accordance with the original plan, have already been published in bulletin form. Others are now in the hands of the printer, and the final studies are approaching completion so rapidly that I anticipate the publication of the volume within the next six months. These supplemental reports will bring together in one quarto volume of about 1,200 pages studies on the topics of area, population, increase of population, density and distribution, sex, age, race, negro population and farming, Indian population, Mongolian population, internal migration, illiteracy, marital condition,

occupations, vital statistics, birth rate, report on boundaries of accessions, methods of estimating population, methods of mechanical tabulation, and derivative tables relating to the foregoing subjects.

ELECTRICAL INDUSTRIES.

The division of manufactures, Mr. William M. Steuart, chief statistician, is engaged in completing a series of important reports upon electrical industries. These reports are four in number, and cover street and electric railways, the complete report upon which subject is in the hands of the printer; electric light and power plants, upon which a final bulletin has been published; municipal electric fire alarm and police patrol systems, already published in bulletin form; and telegraphs and telephones, upon which a bulletin is now in preparation. This series of reports is to be assembled in one quarto volume. Together they present a complete account of the remarkable development of the electrical industry in its application to public utilities. Nothing so rapid, so striking, and so revolutionary in its effects upon private manufacturing and public convenience as the application of electricity to power and heating purposes has been witnessed in industrial history. So marked are the improvements made and the new uses to which electricity is applied that changes in the statistics of these industries occur with great rapidity, and marked variations doubtless arise during the brief period that elapses between compilation and actual publication. The relation of these industries to the economic and social welfare of the country is so intimate, and is daily becoming so much more important, that I recommend that Congress be asked to authorize new inquiries at dates five years subsequent to those covered, instead of waiting for the decennial period, as originally contemplated by the census law.

COTTON STATISTICS.

The annual canvass of the cotton ginners of the Southern States, taken for the purpose of ascertaining the size of the crop during the progress of the picking, was made last year with results highly gratifying from the point of view both of accuracy and of the promptness with which the information was given to the public. The increasing experience of the Bureau has produced such improvement in canvassing methods that preparations for this year's reports were promptly completed.

There will be six canvasses, showing the amount of cotton ginned to September 1, October 18, November 14, December 13, 1901, January 16, 1905, and the end of the season.

The number of special agents employed has been increased from 631 to 667, by the division of a number of the larger districts, thus insuring greater rapidity in gathering the data.

Although the reports of each agent show the quantity of cotton ginned to fixed dates, they are received at the Bureau at different times, depending upon the period required to complete the canvass in the respective districts. The publication of the results has been delayed heretofore until all of the returns were received, but the statistics for the crop of 1904 will be published by county totals and the results made public as rapidly as received. The individual returns will be summarized when all are received and the totals will

be published as the quantity ginned to the given date in each State, in conformity with the practice followed heretofore.

It is believed that this system will result in satisfying the demand for the early publication of the data, that it will aid in avoiding the fluctuation in prices due to an anticipation or a manipulation of the facts contained in the reports, and that it will also eliminate all possibility of information being given out in advance of its publication by the Bureau.

The cost of the canvass of 1903 was $99,395, but by reason of the increased number of agents employed the cost in 1904 will be $116,400.

THE MANUFACTURING CENSUS OF 1905.

The division of manufactures is also engaged in the preliminary work of the quinquennial census of manufactures, authorized by section 8 of the census act. This preliminary work consists in the preparation of the main and supplemental schedules and the carding of the manufacturing establishments to be canvassed. The information for the latter work is obtained from the schedules returned in 1900, supplemented by State, county, and local directories. The plans of the Bureau contemplate the collection of a considerable percentage of the schedules by correspondence; and a copy of the schedule will be mailed to every manufacturer in the United States, whose existence is known, in advance of the actual canvass by districts. It is proposed in that canvass to utilize the clerical force of the Bureau as far as possible, thus avoiding the necessity of appointing untried and untrained special agents to superintend the work in the field.

COOPERATION WITH THE STATE OF MICHIGAN.

An important step in the direction of cooperation and collaboration between the Bureau of the Census and the statistical offices of the several States was taken by Congress at its last session, in the enactment of the following law approved March 1, 1904:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Director of the Census is hereby authorized and empowered to cooperate with the secretary of state of the State of Michigan in taking the census of manufactures and shall equitably share the expenses thereof, the results of which may be accepted by the United States as its census of manufactures for that State for the year nineteen hundred and five: *Provided*, That the expenditures incident to this cooperation shall not exceed twenty thousand dollars, such expenditures to be paid from the fund appropriated for the expenses of the field work of the census for the fiscal year ending June thirtieth, nineteen hundred and five. And the Director of the Census may, in his discretion, cooperate with the officials of other States which take a like census in so far as it may aid in the collection of statistics of manufactures required by existing law.

The immediate occasion for this legislation was the fact that the constitution of Michigan requires a census of population, agriculture, manufactures, and mining to be taken in the year 1904. The secretary of state of Michigan, under whose authority this census is taken, desired to cooperate with the Bureau of the Census in the manufacturing canvass, in accordance with the recommendation of the Director of the Census in his last report, in order to save the expense of what would prove to be almost a duplicate canvass but six months apart, and in order that the manufacturers of the State might not be subjected to the annoyance of making two returns. The Bureau

of the Census could not, however, accept manufacturers' returns for the year 1904 as a part of its census of 1905. The Michigan official therefore appealed to Congress; and with the approval of the Secretary of Commerce and Labor and the Director of the Census the above-quoted statute was unanimously enacted.

Under this law an agreement was made with the secretary of state of Michigan whereby the manufacturing schedule of the Census Bureau was accepted for the Michigan census, and the correction and compilation of the returns were undertaken by this Bureau. Thus complete agreement between the census report and the Michigan report was assured. In consideration of the control over the form and character of the returns thus accorded the Census, the latter undertook to defray two-thirds of the expense of the field work, the State of Michigan, on the other hand, affording the Census free use of its office facilities and clerical force at the State capital. In this way the cost of the canvass is "equitably shared," and a considerable sum of money is saved to both the National and State governments.

The money saved is the least important advantage growing out of this joint canvass of the manufacturing industries of Michigan. It is the first practical step ever taken looking to the unification of the official statistics of the States and the nation, and the avoidance of the conflict and confusion which have attended their contradictory character. It must lead logically to systematic and sympathetic cooperation along similar lines in many other States, thus foreshadowing an ultimate unity and harmony in official investigations of the utmost advantage to statistical science.

The field work for the Michigan census was undertaken in the latter part of July and entirely completed by the latter part of September.

COOPERATION WITH THE STATE OF MASSACHUSETTS.

An arrangement nearly identical with that made with Michigan has already been entered into with the bureau of the statistics of labor of the State of Massachusetts for a cooperative canvass of the manufacturing industries of the State, which takes a decennial census in 1905. The saving of money by the avoidance of a double canvass will be considerably greater in this State; and the union of forces is the more gratifying and significant by reason of the fact that among the States Massachusetts has long taken the front rank in statistical investigation.

COOPERATION WITH OTHER STATES.

A number of States in which no midway census is taken maintain bureaus of statistics, well organized and equipped, which compile annual or biennial reports upon the industries and industrial conditions of the Commonwealth. These reports, while possessing much intrinsic value in many instances, have never been compiled from schedules uniform with those of the United States census, or even with those used in other States. It follows that the statistics are not comparable with those of the Federal census or with those of neighboring States. Their usefulness has therefore been greatly, and it would seem unnecessarily, circumscribed. All these periodical

State reports can be made to serve as supplements to the Federal census if the returns are secured along identical lines. State reports, which are now only useful locally, would thus become of far greater value. They would measure accurately comparative growth from year to year within the State and could readily be made to possess national significance.

Acting on this theory, and so construing the authority conferred by the Michigan statute, the Director of the Census is now engaged in making arrangements with the chiefs of the bureaus of statistics in a number of these States, whereby their cooperation will be secured in the manufacturing census of 1905. Under the plan proposed the chief of the State bureau will be appointed a special agent of the Census Bureau and have charge of the canvass of a portion of his State, subject to such regulations as may be necessary to secure uniformity of method, thus giving the Census Bureau the advantage of a supervising special agent having training and experience in similar work, who is familiar with industrial conditions in the State, and who already possesses much of the machinery and organization necessary to a prompt and efficient canvass. In consideration, the chief of the State bureau agrees to accept the results of the Federal census in his State report for the current year, and not to make any additional canvass of the industries covered by the Federal census. Having once adopted the census method of presenting results, it is highly probable that the State bureaus will continue to use them in subsequent reports; and thus another gratifying advance in the movement for unification of industrial statistics will have been made.

The States in which it has been feasible to make the arrangement above described, in whole or in part, and the officials in charge of the several bureaus, are as follows:

California: W. V. Stafford, commissioner, bureau of labor statistics.
Illinois: David Ross, secretary, State bureau of labor statistics.
Indiana: Benjamin F. Johnson, chief, bureau of statistics.
Iowa: Edward D. Brigham, commissioner, bureau of labor statistics.
Kansas: W. L. A. Johnson, commissioner, bureau of labor and industry.
Massachusetts: Charles F. Pidgin, chief, bureau of statistics of labor.
Michigan: A. C. Bird, supervisor of census.
Minnesota: John O'Donnell, commissioner, bureau of labor.
Missouri: William Anderson, commissioner of labor, bureau of labor statistics and inspection.
Nebraska: Burrett Bush, deputy commissioner of labor, bureau of labor and industrial statistics.
New Hampshire: Lysander H. Carroll, commissioner, bureau of labor.
New Jersey: Winton C. Garrison, chief, bureau of statistics of labor and industries.
New York: A. F. Weber, chief statistician, department of labor, bureau of statistics.
North Carolina: Henry B. Varner, commissioner, bureau of labor and printing.
Wisconsin: Halford Erickson, commissioner, bureau of labor and industrial statistics.

COOPERATION IN TAKING THE CENSUS OF POPULATION.

This movement for cooperation in the compilation of industrial statistics suggests the advantages which would result from a similar cooperation between the several States and the Census Bureau in taking the census of population.

In 24 States and Territories of the Union there is a constitutional or statutory requirement for a decennial census of population. Of

this number, 13—Florida, Iowa, Kansas, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Rhode Island, South Dakota, Utah, and Wisconsin—took a population census between 1890 and 1895. These States contained, in 1900, 23,950,628 inhabitants, or 31.52 per cent of the total population of continental United States. The remaining 11—Alabama, California, Colorado, Idaho, Mississippi, Montana, Nebraska, Nevada, Oklahoma, South Carolina, and Wyoming—do not comply with their legal requirement for enumeration. These States contained, in 1900, 8,749,634 inhabitants, forming 11.51 per cent of the total population. The 24 States and Territories above named contained, in 1900, 32,700,262 inhabitants, thus comprising 43.03 per cent of the total population of the United States. The 11 States and Territories having unobserved laws for decennial enumeration and the 28 without such legal requirement prefer to rely wholly upon the Federal census rather than to incur the expense of taking a midway census of their own.

That the rapid social evolution and complex growth of the United States call for a census of population more frequently than once in ten years is a proposition generally admitted by economic and sociological experts. Provision for five-year enumerations has already been made by some countries of Europe, notably France and Germany, and there is a thoroughly organized movement to secure a quinquennial census of Great Britain. In May last a deputation representing the Royal Statistical Society, the Royal Institute of Actuaries, the Sanitary Institute, the Society of Medical Officers of Health, and other similar organizations appeared before the local Government board to urge action looking to a quinquennial census of England and Ireland in 1906. Reference was made at the hearing to the recent establishment of a permanent Census Bureau in the United States as an example Great Britain should follow, and as the necessary preliminary to a more frequent census of the population. It was pointed out that at the census of 1891 there was a discrepancy of 701,843 between the estimated and enumerated population, while at the census of 1901 a difference of 142,000 occurred in the opposite direction. These discrepancies were especially marked in certain localities. For example, in 1901 the registrar-general's estimate of the population of West Ham was 58,278 in excess of the actual figures, causing an error of 3.5 per 1,000 in the estimated death rate. In Liverpool the registrar-general, in 1891, overestimated the population by 100,000, and in 1901 underestimated it by 50,000.

As stated by Sir Robert Giffen, the actual number of the population is the dominant factor governing every statistical investigation into the condition of national health, wealth, and well-being. The only objection raised in England to a quinquennial census of population is that of the expense involved. It is proposed to reduce this expense to a minimum by restricting the intermediate census to the simplest schedule, relating to age, sex, and the distribution of the people. One of its chief advantages would be the check it would afford upon the accuracy of the decennial census.

COOPERATION AUTHORIZED BY CONGRESS IN 1879.

The objection based upon cost is more valid in the United States than in Great Britain, and the obvious way to meet it in the United

States is through the cooperation of the States. A carefully devised plan to secure such cooperation was incorporated in the act for taking the Tenth and subsequent censuses, approved March 3, 1879. The plan was suggested by Hon. Francis A. Walker, Superintendent of the Ninth and Tenth censuses, and the closest student of census problems we have had in this country. This plan was embodied in section 22 of that act, which read as follows:

That if any State or Territory, through its duly appointed officers or agents, shall, during the two months beginning on the first Monday of June of the year which is the mean between the decennial censuses of the United States is by this act directed to be taken, take and complete a census in all respects according to the schedules and forms of enumeration in the census of the United States and shall deposit with the Secretary of the Interior, on or before the first of September following, a full and authentic copy of all schedules returned and reports made by the officers and agents charged with such enumeration, then the Secretary of the Treasury shall, upon receiving a certificate from the Secretary of the Interior, that such schedules and reports have been duly deposited, pay, on the requisition of the governor of such State or Territory, out of any funds in the Treasury not otherwise appropriated, a sum equal to fifty per centum of the amount which was paid to all supervisors and actual enumerators within such State or Territory at the United States census next preceding, increased by one-half the percentage of gain in population in such State or Territory between the two United States censuses next preceding: *Provided*, That the blank schedules used for the purposes of the enumeration herein provided for shall be similar in all respects of form and size of heading and ruling to those used in the census of the United States.

Under this provision the Federal Government was to pay practically one-half the cost of the quinquennial enumeration of each State taking a census, thus securing all the advantages of an enumeration on lines exactly parallel to its own decennial census. Several States took advantage of the provision, sent forward to Washington copies of their schedules, and received their money for them. These returns were stored away in the Department of the Interior, and no use was ever made of them. The fatal obstacle to the success of General Walker's plan was the fact that there existed no permanent census bureau to handle the returns as received. That obstacle is now removed. By the reenactment of section 22 of the act of 1879 the United States can obtain, for one-half the actual cost of the work, a census of a large number of the States at the midway periods. The number of States will be sufficiently large to permit an accurate estimate of population for the remainder, and if this provision of law, so advantageous to the States, should be reenacted, there undoubtedly will be a rapid increase in the number of States and Territories taking an intermediate census. It is even possible that eventually all would participate in a work so essential to each.

It would be especially appropriate to reenact the law of 1879 at the present tme, for this law may be called the forerunner of the various lines of cooperation between the Federal census and State and municipal officials described elsewhere in this report.

A bill to reenact section 22 of the act of 1879 was introduced at the last session of Congress by Mr. Crumpacker, of Indiana, chairman of the House Census Committee. I earnestly urge that you recommend favorable action upon this measure. If it can be passed at an early period in the approaching session of Congress it will undoubtedly lead to legislation in some States for a cooperative population census in 1905.

ESTIMATES OF POPULATION.

As announced in the last report of the Director, the Census Bureau has undertaken, both in response to a popular demand and to meet the requirements of its own work, to prepare and publish estimates of population in intercensal years for cities and towns of 8,000 population and upward and for the several States and the entire country. The bulletin containing these estimates for the years 1901, 1902, and 1903 was published in April, 1904. The estimates were made in accordance with the uniform plan described in detail in the bulletin.

The constant demand for this bulletin from all parts of the country proves that its publication has met a definite and intelligent popular requirement. It is surprising to find in how many lines of business there is need for estimates of this character. But their chief usefulness is in determining the death rates of municipalities; and it is cause for comment that these death rates have been so long computed in this country on the basis of local estimates of population, in the calculation of which no uniform method has obtained, making it inevitable that no accurate comparison is possible between the death rates of different cities, except in the census years, when all local ratios are supposed to be corrected on the basis of the enumeration.

The science of sanitary statistics is still in its infancy in the United States, and it is in the further development of this science that the permanent Census Bureau is destined to perform its most important service to the public. Estimates of population for municipalities have been officially made in Great Britain for a long period, and the closest attention is paid to them in all matters that have to do with sanitation and the promotion of the public health. But, as stated above, these official estimates of population are sometimes found to be grossly in error, resulting in most misleading conclusions. Similar errors will be inevitable in the population estimates of the Census Bureau; indeed, they should naturally be even greater and more frequent than has been the case in England, for our population is much more mobile, and the growth of our cities is influenced by many conditions which do not prevail in older countries, and which can not be measured by any uniform rule based upon the ratio of annual growth in the previous decade. The danger of inaccuracy increases rapidly as the distance from a decennial census increases, and conditions undoubtedly prevail in many western cities where it will be better not to attempt to compute the rate of growth for a period beyond five years, when there is no intermediate State census by which to correct the estimates. These considerations emphasize the necessity of such censuses, and reenforce the argument in favor of the plan for taking them by cooperation between the Federal and State governments.

COMPARISON OF RETURNS OF MICHIGAN POPULATION CENSUS WITH ESTIMATES OF THE BUREAU OF THE CENSUS.

The Michigan State census of 1904 is the first opportunity which has occurred for testing the value of the Census Bureau method of estimating the population. This census showed 28 cities in that State to have 827,294 inhabitants; as estimated by the Census Bureau these cities contain 824,310, a difference of 2,984 inhabitants, the State census exceeding the estimated population less than one-half of 1

per cent. The total population reported by the State census was 2,530,016; as estimated by the Census Bureau, 2,546,258. The estimate for the entire State therefore exceeds the exact figures by 16,242, or six-tenths of 1 per cent. These general figures clearly illustrate how closely the results of the Census Bureau method of estimating approximate to actual enumeration in States showing normal conditions, as in the case of Michigan. The population of Detroit, the largest city in Michigan, was estimated by this Bureau to be 317,636 in 1904; the actual population returned by the census is 317,591. In this noteworthy case there was a difference of only 45, or less than one-tenth of 1 per cent, between the estimated and the actual enumeration. For some of the other cities of the State greater variation occurred, owing to local conditions. For cities growing more rapidly than at the normal rate, such as Kalamazoo, Lansing, Marquette, and Saginaw, the estimates resulted in a lower figure than the actual population as returned at the State census, the difference being more than 10 per cent; while in other cities growing less rapidly than at the normal rate, such as Ann Arbor, Iron Mountain, Ishpeming, Manistee, and Menominee, the Census estimates exceeded the State census returns more than 10 per cent. For the 28 cities referred to, this Bureau overestimated the population of 16 and underestimated that of 12. The greatest increase over the Census estimate appears in the city of Saginaw, due to the decrease in population from 1890 to 1900 and to the increase which has subsequently occurred. Such a condition, however, is clearly exceptional. but Census Bulletin 7, Estimates of Population, calls attention with considerable emphasis to the fact that there will always be many individual cases where the estimates will be far from correct, owing to exceptional changes in municipal growth. In general, the larger the area the more likely to be correct is the method of estimating adopted by the Bureau of the Census.

INCREASING EFFICIENCY OF EMPLOYEES.

The importance of training as a factor in connection with the preparation of special reports and the Thirteenth Census was one of the reasons which led to the establishment of the permanent Census Bureau. Therefore it is especially agreeable to be able to report to you that the clerks and officials of this Bureau, as they grow more proficient, are becoming individually more interested in the lines of work under investigation, are showing greater adaptability for assignment to different inquiries, and promise to become an exceptionally efficient force. It is my policy to transfer clerks in large numbers from one division to another as the pressure of work demands. Incidentally this policy has increased greatly the familiarity of the clerks in the Bureau with different classes of work. As many male clerks are assigned to field work as can be spared from duty in the office; thus a considerable proportion of the employees of the Bureau are constantly dealing directly with the business and professional classes in different communities. This policy enables many of the employees of the Bureau to obtain practical experience in the first step of census work, in addition to the knowledge which they already possess of Census Bureau routine.

The lack of expert assistance in training and directing clerks in this office was recognized by Congress at the last session, and the number of expert chiefs of division was increased from 4 to 8. A list of the

officials in the Bureau of the Census and the number of clerks and employees, by different grades, will be found in Appendix B.

Respectfully,

S. N. D. NORTH, *Director.*

Hon. VICTOR H. METCALF,
Secretary of Commerce and Labor.

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REPORT OF THE COMMISSIONER OF CORPORATIONS.

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF CORPORATIONS,
Washington, December 19, 1904.

SIR: I have the honor to submit the first general report of the Commissioner of Corporations, covering the period from the organization of the Bureau to June 30, 1904.

The law under which the Bureau of Corporations was created is section 6 of the act of Congress establishing the Department of Commerce and Labor, approved February 14, 1903, reading as follows:

SEC. 6. That there shall be in the Department of Commerce and Labor a bureau to be called the Bureau of Corporations, and a Commissioner of Corporations who shall be the head of said bureau, to be appointed by the President, who shall receive a salary of five thousand dollars per annum. There shall also be in said bureau a deputy commissioner who shall receive a salary of three thousand five hundred dollars per annum, and who shall in the absence of the Commissioner act as, and perform the duties of, the Commissioner of Corporations, and who shall also perform such other duties as may be assigned to him by the Secretary of Commerce and Labor or by the said Commissioner. There shall also be in the said bureau a chief clerk and such special agents, clerks, and other employees as may be authorized by law.

The said Commissioner shall have power and authority to make, under the direction and control of the Secretary of Commerce and Labor, diligent investigation into the organization, conduct, and management of the business of any corporation, joint stock company, or corporate combination engaged in commerce among the several States and with foreign nations, excepting common carriers, subject to "An Act to regulate commerce," approved February fourth, eighteen hundred and eighty-seven, and to gather such information and data as will enable the President of the United States to make recommendations to Congress for legislation for the regulation of such commerce, and to report such data to the President from time to time as he shall require; and the information so obtained or as much thereof as the President may direct shall be made public.

In order to accomplish the purposes declared in the foregoing part of this section, the said Commissioner shall have and exercise the same power and authority in respect to corporations, joint stock companies and combinations subject to the provisions hereof, as is conferred on the Interstate Commerce Commission in said "Act to regulate commerce" and the amendments thereto in respect to common carriers so far as the same may be applicable, including the right to subpœna and

compel the attendance and testimony of witnesses and the production of documentary evidence and to administer oaths. All the requirements, obligations, liabilities, and immunities imposed or conferred by said "Act to regulate commerce" and by "An Act in relation to testimony before the Interstate Commerce Commission," and so forth, approved February eleventh, eighteen hundred and ninety-three, supplemental to said "Act to regulate commerce," shall also apply to all persons who may be subpœnaed to testify as witnesses or to produce documentary evidence in pursuance of the authority conferred by this section.

It shall also be the province and duty of said Bureau, under the direction of the Secretary of Commerce and Labor, to gather, compile, publish, and supply useful information concerning corporations doing business within the limits of the United States as shall engage in interstate commerce or in commerce between the United States and any foreign country, including corporations engaged in insurance, and to attend to such other duties as may be hereafter provided by law.

The Commissioner was nominated by the President on February 17, confirmed by the Senate on February 21, and took the oath of office on February 25, 1903, and the organization of the Bureau proceeded as rapidly as was consistent with the proper development of work in an entirely new field.

The growth of the Bureau is shown by the following statement, which gives the number of persons actually employed in its service and the total expenditures on account of the salaries, per diem, and traveling expenses of the employees from month to month from the beginning of the Bureau's history. This includes the salary of employees detail from other bureaus or offices, and excludes salary of employees carried on the Bureau of Corporations roll but detailed for duty in other bureaus or offices, and hence represents the actual cost of all service rendered directly to the Bureau of Corporations.

NUMBER OF EMPLOYEES AND TOTAL SALARY AND EXPENSES, BUREAU OF CORPORATIONS, FROM THE ESTABLISHMENT OF THE BUREAU, FEBRUARY, 1903, TO JUNE 30, 1904, INCLUSIVE.

Month.	Number of employees.	Expenditures.		
		Salaries.	Expenses.	Total.
1903.				
February	1	$55.56		$55.56
March	6	613.10		613.10
April	10	1,155.52		1,155.52
May	13	1,829.92		1,829.92
June	14	1,994.47		1,994.47
July	14	2,149.70	$110.59	2,260.29
August	20	2,549.13	157.57	2,706.70
September	23	2,887.36	146.75	3,034.11
October	26	3,493.02	120.47	3,613.49
November	28	3,630.64	34.85	3,665.49
December	31	4,121.66	21.04	4,142.70
1904.				
January	31	4,377.20	3.10	4,380.30
February	33	4,044.48	19.25	4,063.73
March	38	5,053.71	17.00	5,070.71
April	49	5,701.25	1,439.35	7,140.60
May	58	6,361.72	3,495.55	9,857.27
June	64	7,115.97	6,663.03	10,779.00
Paid since June 30, 1904		.93	424.36	425.29
Outstanding Oct. 31, 1904			72.45	72.45
Total		57,135.84	9,725.36	66,860.70
Less work on Department history		741.65		741.65
Total		56,393.69	9,725.36	66,119.05

From the establishment of the Bureau to June 30, 1904, other expenses were as follows:

Furniture (as per inventory June 30, 1904)	$5,472.72
Books on hand (as per inventory June 30, 1904)	775.80
Supplies (in part estimated)	3,512.48
Printing (in part estimated)	823.40
Total	10,584.40

In order to show in full the actual cost of the operation of the Bureau the items of rent, janitor and watchman service, telephone service, and light and heat should be added. As these expenses are borne by the Department out of general appropriations for that purpose, and no distribution thereof is made among the several bureaus and offices, these items can only be estimated, and for the purpose of this statement they are estimated at $5,000.

We may, therefore, summarize as follows:

Salaries, traveling expenses, and per diem	$66,119.05
Furniture, books, miscellaneous supplies, and printing	10,584.40
Rent, etc., as above estimated	5,000.00
Total expense of operation of Bureau of Corporations from February 25, 1903, to June 30, 1904	81,703.45

This statement of the cost of the Bureau has been made without regard to the appropriation drawn upon. Certain employees of other bureaus and of the Secretary's office have been detailed to this Bureau; the expenses of such details have been included in the above although not paid from appropriations specifically made for this Bureau. On the other hand, certain employees of this Bureau have been detailed to the Secretary's office and to other bureaus of the Department; and the expenses of such, although paid from appropriations for this Bureau, have not been included in the above. The object is to show the actual cost to the Government of the operation of the Bureau of Corporations. Under normal conditions—after the exigencies incident to the organization of the new Department have ceased—there will be no need for the exchange or use of details.

LIBRARY OF THE BUREAU.

The Bureau's library consists of the following books:

	Volumes.
Law: Text-books, reports, and digests	416
State codes and sessions laws (including 132 pamphlet constitutions and laws)	409
Statistical publications, chiefly United States public documents (including 62 unbound)	229
Insurance publications, State laws, and reports (including 118 pamphlets)	630
Reports of State officers, boards, and bureaus (including 59 pamphlets)	256
Works on economics	22
Cases: Printed pleadings, etc. (pamphlets)	20
Total	1,982

Only such books as may be termed "tools of trade" have been purchased. The Congressional Library is used for all books of casual reference or needed for special investigation.

THE PERSONNEL OF THE BUREAU.

Special care has been exercised in the selection of the employees of the Bureau, in order to obtain specially qualified and technically trained men. They have been chosen from the certifications of the United States Civil Service Commission, or by the approval of the Commission, or by transfer from other bureaus and Departments of the Government. The satisfactory results obtained prove the efficiency of the present administration of the civil-service act.

The routine administrative work of the Bureau has been organized in accordance with the most improved business methods, the purpose being to obtain the highest degree of efficiency, accuracy, and promptness in daily work, and at the same time to exercise strict business economy. Not only have the expenditures been within the appropriations, but the work is worth what it cost.

During the period of the organization of the Department of Commerce and Labor the Secretary was obliged to detail the Commissioner, the Deputy Commissioner, and various employees of the Bureau of Corporations upon purely departmental work. This necessity arose from the fact that the first appropriations were insufficient to meet the absolute needs of the Department.

The appropriations for the year ending June 30, 1905, are $156,220.

The estimate for the year ending June 30, 1906, are $236,420, being an increase of $80,200, or about 51 per cent.

The request is made that the wording of the appropriation be changed so that there will be no statutory division of the sum appropriated among special agents, special attorneys, and special examiners. The need of this change can not be too strongly urged. The work of the Bureau can not be conducted along fixed lines of employment, for the reason that in one investigation legal work will predominate and in another financial or economic, and hence the specific character of employment should be left to the discretion of the Secretary and the Commissioner. As shown by experience, much work in a special investigation is temporary, the character of which can not be foreseen. A great advantage in the use of the appropriation as requested in the estimates is that field and office men can readily be exchanged in accordance with the needs of special investigations. It has been found that better results and greater economy are possible by requiring field officers to work up in the office the reports of their own investigations and examinations.

PURPOSE AND SCOPE OF ORGANIC LAW.

The first work of the Bureau was a thorough study of the purposes and scope of its organic law, the jurisdiction and powers of the Commissioner, and methods of procedure. Such study of necessity covered a wide range of legal research, including both Federal and State legislation and judicial decision.

The Bureau is in a measure an arm of the legislative branch of government, charged with the duty of obtaining information to which Congress is entitled on the subject of interstate and foreign commerce. It is placed under the executive branch of the government for the purpose of administration and continuity of action.

Congress, having the constitutional authority to legislate in regard to interstate and foreign commerce, has the power to obtain all infor-

mation necessary to make such legislation adequate and appropriate. Congress has in this case created the Bureau of Corporations as a specific means of carrying out the purpose desired, prescribing the method of investigation by the Bureau and of transmission of the information obtained to Congress through the Executive.

A system of reports made through the President is obviously appropriate because of the necessity of voluminous and extensive investigations involving the private affairs of citizens. Such reports must needs be passed through some sifting process and presented to Congress in such form as to afford a basis for legislation, and with as great a degree of publicity of detail as may be consistent with the proper protection of private rights. It appears, therefore, that the means provided by Congress are constitutional and peculiarly appropriate for carrying out the intricate, far-reaching, and delicate work that the proper execution of this constitutional power calls for.

The powers of the Bureau of Corporations are described largely by reference to those of the Interstate Commerce Commission. The chief difference between the two administrative bodies is that while information is collected by the Interstate Commerce Commission mainly for the purpose of *enforcing* a law, the information to be collected by the Bureau of Corporations is to be used for the purpose of *making* law—a more fundamental and primary corollary of the legislative function, more intimately connected with the constitutional power of regulating interstate commerce, and carrying with it, therefore, as great, if not greater, authority for the obtaining of information over the subject-matter in question.

That the end—the regulation of interstate commerce—is legitimate and within the scope of the Constitution, and that the means—the Bureau of Corporations and its powers—are appropriate, are adapted to that end, are not prohibited, and are consistent with the letter and spirit of the Constitution, is indisputable; and the creation of the Bureau of Corporations for the purpose specified, and with the powers given in its organic act, is a constitutional exercise of the legislative power of Congress.

The jurisdiction of the Bureau, by the organic act, extends over all agencies, other than individuals, engaged in interstate and foreign commerce, except common carriers under the jurisdiction of the Interstate Commerce Commission, and is limited only by the decisions of the Supreme Court of the United States defining "interstate and foreign commerce." It is unwise, even were it possible, to attempt here to summarize or restate such definitions. From the earliest opinion of Chief Justice Marshall, i. e., "that commerce is intercourse," there has been a gradual development or elaboration of the definition in accordance with the growth and change of commercial conditions, until now practically all the great industries may be considered subject to Federal authority for certain purposes under the commerce clause of the Constitution.

WORK OF THE BUREAU.

The work of the Bureau falls naturally into the following divisions: (*a*) *Special investigations* of particular corporations, joint-stock companies, or corporate combinations engaged in interstate and foreign commerce. For this purpose the Commissioner is given power to compel the production of testimony.

(*b*) The collection and publication of *useful information* regarding corporations engaged in interstate and foreign commerce.

(*c*) *Insurance companies* are included specifically under the work of obtaining useful information; but because of the decisions of our courts regarding insurance the question of the power of the Commissioner over insurance companies requires special consideration.

Federal control over insurance and the exercise over insurance corporations of the compulsory powers of the Commissioner rest upon the same legal basis, raising at the outset the question whether insurance is in any of its forms interstate commerce.

A long line of decisions of the Supreme Court of the United States, commencing with Paul *v.* Virginia (8 Wall., 168), established the legal proposition that insurance was not interstate commerce in any of its forms—fire, life, or marine—as presented to the court. This line of decisions has been further supported by the uniform holdings of State courts.

If this legal proposition is irrevocably settled, the powers of the Commissioner relative to insurance are purely of a statistical, voluntary, noncompulsory nature. He may collect, compile, and publish such information as may be voluntarily furnished to him, but he can not compel the production of such information, nor would he be justified in recommending any Federal legislation directed at Federal control of insurance. The rapid development of insurance business, its extent, the enormous amount of money and the diversity of interests involved, and the present business methods suggest that under existing conditions insurance is commerce, and may be subjected to Federal regulations through affirmative action by Congress. The whole question is receiving most careful consideration upon both legal and economic grounds.

(*d*) *Legal research.*—A most important branch of work is the determination of the entire legal situation applicable to the Bureau, to its powers, and to its present and future work, developing the same along the following lines:

1. Compiling and digesting court decisions applicable to the Bureau, to its powers of investigation, its legal status and the means by which it shall perform its functions, and to the great questions and problems which are before the Bureau.

2. Compiling and digesting Federal and State statute laws relating to the purposes of the Bureau.

3. Compiling and comparing the laws of foreign countries upon kindred subjects.

4. Compiling and digesting in summarized and available form facts showing the actual operation of such laws now in existence.

5. Preparing in outline such possible and desirable modifications of existing laws relating to the subject-matter of the Bureau's work as may be from time to time indicated by development of that work.

6. Determining the legal relations that would be established by the enactment of such possible modifications with especial reference to the effects thereof on State laws, and the interrelation of Federal and State jurisdictions.

(*e*) *Economic and statistical work.*—In this work there will be the greatest possible use of all material available from other Government offices in order to avoid unnecessary duplication of effort, expense, and almost inevitable conflict in results. Statistics will be compiled and

published only for the purpose of properly presenting the special problems with which the Bureau is dealing. The economic work will necessarily be of vital importance in preparing and presenting the results of special investigations, and in rightly interpreting the mass of information obtained.

POWERS OF THE COMMISSIONER.

The powers of the Bureau are vested in the Commissioner of Corporations; he is the head of the Bureau, has all the usual powers necessary for its administration, and upon him is conferred the authority for carrying out the purposes of the Bureau's creation.

The power of investigation and report is stated directly, but in general terms, in the organic act.

The details, exact extent, and machinery for exercising these general powers are established by reference in said act to the statutory powers of the Interstate Commerce Commission.

To determine fully the powers of the Commissioner it is necessary, therefore, to consider the powers of the Interstate Commerce Commission with reference to their applicability to the character and purpose of the Bureau of Corporations.

From this it appears that the powers of the Commissioner are as follows:

Subject to the direction of the Secretary of Commerce and Labor, to investigate the organization, conduct, and management of corporations (other than common carriers) engaged in interstate commerce; to compel by subpœna the attendance of witnesses, and the production of books, papers, and documents for such purpose; to administer oaths; to obtain the aid of the Federal courts in the procuring of such testimony; to require reports from such corporations; to investigate the legal conditions applicable to such corporations, and the legal questions raised thereby; and to report to the President the information so acquired. The Commissioner may determine the form of procedure in investigations, subject to the qualification that hearings may not be in public.

The Commissioner has no judicial powers, nor can he make or enforce any orders against corporations or private individuals other than those directly necessitated in procuring information. He can impose no fines or penalties. Even within the scope of his duties, he must invoke the aid of a Federal court for the enforcement of his proper orders or requirements.

Many specific powers of the Interstate Commerce Commission, relating to (*a*) the issuance of orders for remedial action, (*b*) enforcement of such orders, (*c*) decisions on contests between individuals, (*d*) matters exclusively concerning railroads and common carriers, and (*e*) details as to composition, salary, and internal administration of the Commission, are clearly inapplicable to the character and purpose of the Bureau of Corporations, and may not be exercised by the Commissioner.

He can not make investigations, or procure or furnish information by means of his compulsory powers, for the purpose of enforcing penal provisions other than those contained in the organic act of the Bureau, nor can he furnish information so procured to private individuals for their personal use.

His compulsory investigatory powers are further limited by the rights of privacy of the citizen, which may not be invaded by inquiry except for a definite constitutional and legal object, and only such matters may be investigated as relate to and give information upon the objects of the Bureau and its work.

His entire compulsory powers of inquiry are further confined to the consideration of facts relating to corporations, joint stock companies, or corporate combinations.

A more general, though noncompulsory power is also conferred upon the Commissioner to collect, compile, and publish, under direction of the Secretary of Commerce and Labor, useful information concerning corporations in the United States engaging in interstate or foreign commerce, including those engaged in insurance.

He shall also perform such other duties as may hereafter be provided by law.

LEGAL WORK OF THE YEAR.

The objects toward which the legal work of the Bureau has been directed are as follows:

(1) To ascertain as fully as possible and present in available form the legal conditions under which corporate business is now being carried on, in so far as such conditions are peculiar to such corporate business.

(2) To ascertain and develop fully, from court decisions and otherwise, those constitutional powers and restrictions upon which present conditions are based, and also those which must necessarily be involved in any future legislation for the improvement of the present legal corporate conditions.

In pursuance of these general purposes, the legal work of the year has been as follows:

I. INVESTIGATION OF STATE AND TERRITORIAL CORPORATION LAWS AND RECORDS.

To determine the legal conditions of corporate business, it was necessary to obtain a complete record of the statute law governing the creation and operation of corporations, reduced to such shape that the statutory provision relating to a given topic, in any State, would be immediately available. An early undertaking, therefore, was a compilation of State and Territorial statute law relating to industrial corporations. The plan of this compilation differs in several particulars from the plan followed in other compilations of the same general character.

From the whole body of corporation law, the provisions relating to selected topics only were extracted; but the topics selected were intended to embrace every statutory provision that goes to make up all the *substantive* law of private corporations of the ordinary business or industrial type, and only such topics were omitted as relate to matters of practice and matters of form or detail. Thus, the heads under which the various provisions were collected are: "Structure and organization;" "Purposes and powers;" "Limitations and restriction;" "Management;" "Amendments and changes;" "Rights and liabilities;" "Corporation and State;" "Intercorporate relations;" "Trusts and monopolies;" "Foreign corporations;" "General property tax," and "License tax." Under these general heads fall others,

which are more specific, and these in turn embrace the particular topics selected (aggregating a total of 106). The various topics are numbered consecutively, and while the laws of each State are separately compiled, the same arrangement and enumeration is preserved in every case, in order to facilitate reference and comparison.

The following is the structural arrangement adopted by the Bureau:

State and Territorial statute law relating to industrial corporations.

——— (*Name of State.*)

ART. I.—STRUCTURE and ORGANIZATION.
- SEC. A. *Charter.*
  - (1) Nature and contents.
- SEC. B. *By-laws.*
  - (2) When adopted.
  - (3) By whom.
  - (4) Scope.
  - (5) Assent prescribed.
- SEC. C. *Membership.*
  - (6) How constituted.
  - (7) Evidence of—when required.
- SEC. D. *Promotion.*
  - (8) Promoters' powers and liabilities.
  - (9) Promoters' acts and engagements.
  - (10) Dummy corporators.

ART. II.—PURPOSES AND POWERS.
- SEC. A. *Purposes.*
  - (11) Provision.
- SEC. B. *Powers.*
  - (12) Provision.

ART. III.—LIMITATIONS AND RESTRICTIONS.
- SEC. A. *Corporate existence.*
  - (13) Duration.
  - (14) Dissolution—Rights affected by.
  - (15) Forfeiture.
- SEC. B. *Corporate indebtedness.*
  - (16) Provision.
- SEC. C. *Corporate stock.*
  - (17) Amount authorized.
  - (18) Amount with which may begin business.
  - (19) Classes.
  - (20) Consideration.
  - (21) Payment.
  - (22) Subscription.
  - (23) Installments.
  - (24) Dividend.
  - (25) Transfer.
  - (26) Corporate lien.
  - (27) Increase.
  - (28) Decrease.
  - (29) Voting.
  - (30) Held by corporation

ART. IV.—MANAGEMENT.
- SEC. A. *In whom vested.*
  - (31) Provision.
  - (32) Receivership.
- SEC. B. *Election of officers.*
  - (33) Provision.
- SEC. C. *Meetings.*
  - (34) Of directors.
  - (35) Of stockholders.

ART. V.—AMENDMENTS AND CHANGES IN CHARTER.
- SEC. A. *Changes authorized.*
  - (36) Provision.
  - (37) Assent prescribed.
  - (38) Certificate of amendment.

ART. VI.—RIGHTS AND LIABILITES.
SEC. A. *Officers and directors.*
(39) Rights.
(40) Duties.
(41) Limitations or prohibitions.
(42) Liabilities.
SEC. B. *Stockholders.*
(43) Rights.
(44) Limitations or prohibitions.
(45) Liabilities.
SEC. C. *Conditions of liability.*
(46) Provision.
SEC. D. *Employees.*
(47) Provision.
ART. VII.—CORPORATION AND STATE.
SEC. A. *General provisions.*
(48) Registered office—Agent.
(49) Books—Inspection.
(50) Receivership.
SEC. B. *Repeal or amendment of corporate law.*
(51) Provision.
SEC. C. *Constitutional provisions.*
(52) Creation by general or special act.
(53) State aid.
(54) Holdings of real estate.
(55) Rights and privileges.
(56) Limitations or restrictions.
(57) Trusts and monopolies.
(58) Taxation.
(59) Foreign corporations.
(60) Constitutional amendments.
(61) Full text.
SEC. D. *State records of corporations—Reports, and returns.*
(62) Tabulated sheet.
ART. VIII.—INTERCORPORATE RELATIONS.
SEC. A. *Merger or consolidation.*
(63) Provision.
SEC. B. *Holdings in other corporations.*
(64) Provision.
SEC. C. *Sale of franchise.*
(65) Provision.
(66) Minority rights.
SEC. D. *Reorganization, succession, or extension.*
(67) Provision.
ART. IX.—TRUSTS AND MONOPOLIES.
SEC. A. *Acts forbidden.*
(68) Provision.
(69) Enforcement of laws.
SEC. B. *Penalties.*
(70) Provision.
ART. X.—FOREIGN CORPORATIONS.
SEC. A. *Conditions of admission.*
(71) Filing charters.
(72) Filing statement.
(73) Appointment of attorney.
(74) Express powers or restrictions.
(75) Reports or returns.
SEC. B. *Taxation.*
(76) See Art. XI.
ART. XI.—PART I. GENERAL PROPERTY TAX.
SEC. A. *Real estate.*
(77) Nature.
(78) Application.
(79) Assessment.
(80) Purposes.

ART. XI.—PART I. GENERAL PROPERTY TAX—Continued.
SEC. B. *Personal property—Tangible and intangible.*
(81) Nature.
(82) Application.
(83) Assessment.
(84) Purposes.
SEC. C. *Personal property—Tangible only.*
(85) Nature.
(86) Application.
(87) Assessment.
(88) Purposes.
SEC. D. *Corporate property as represented by stock or shares.*
(89) Nature.
(90) Determination.
(91) Application.
(92) Collection.
(93) Distribution.
SEC. E. *Corporate bonds.*
(94) Provision.
SEC. F. *Exemptions.*
(95) Provision.
ART. XI.—PART II. LICENSE TAX.
SEC. A. *Charter fee.*
(96) Domestic.
(97) Foreign.
SEC. B. *Franchise tax.*
(98) Nature.
(99) Determination.
(100) Application.
(101) Collection.
(102) Distribution.
SEC. C. *Occupation tax.*
(103) Nature.
(104) Application.
(105) Purposes.
SEC. D. *Exemptions.*
(106) Provision.

CORPORATE RECORDS.

The important matters of corporate reports and returns received a special supplementary treatment. The several instruments, beginning with the charter or certificate of incorporation, which, under the laws of the State, go to make up what may be termed the State or official record of corporations, domestic or foreign, were set down in order, and, in connection with each document listed, notes in tabulated form were made showing when and where the same is filed or recorded, and its contents, as required by law. An example of such table follows:

State records of corporations.

—— (Name of State.)

Domestic.				Foreign.		
Document filed.	Where filed.	When filed.	Contents.	Where filed.	When filed.	Contents.
Charter, certificate, articles.	Secretary of state.	Time of incorporation.	Name; object; capital stock; number of shares; location of principal office; duration. (Statute cited.)	Secretary of state.	Before commencing business.	Copy of charter and statement of proportion of capital stock represented in State and name and address of agent; also to report changes in the same. (Statute cited.)

State records of corporations—Continued.

Domestic.				Foreign.		
Document filed.	Where filed.	When filed.	Contents..	Where filed.	When filed.	Contents.
Certificate of organization.	Secretary of state.	Before proceeding to do business.	Copy of statutory notice for meeting for organization; copy of subscription list; names of directors; terms of office. (Statute cited.)			
Certificate of organization.	Recorder of deeds in county where principal office is located.	Before proceeding to do business.	Copy of all papers hitherto filed with secretary of state. (Statute cited.)			
Statement of real estate.	Secretary of state and county recorder.	Annually before Dec. 21.	Description of all real estate acquired as security for debts, etc. (Statute cited.)			
Certificate of dissolution	Recorder of deeds and secretary of state.	With secretary of state within 3 months after agreeing to dissolve.	Copy of record of all proceedings; reciting adoption of resolution for dissolution; showing debts to have been paid and assets distributed. (Statute cited.)			
Certificate of amendment.	Secretary of state and recorder of deeds.	Before given effect.	Nature of change and certificate of two-thirds vote; change of name; place of business; object; increase or decrease of stock; increase or decrease of directors; consolidation. (Statute cited.)			
Annual report.	Secretary of state.	Annually in February.	Location of principal office in State; names and residences of officers and expiration of terms of office; whether pursuing active business and kind of business. (Statute cited.)			
Returns for taxation.	To assessor who returns same to the county clerk; the latter forwards it to State auditor.	Annually in April or May.	Name; location; amount of capital authorized; number of shares; amount of capital stock paid up; market value or actual value; indebtedness; assessed valuation of all tangible property. (Statute cited.)	Assessor ..	Annually in April or May.	Foreign corporations make return of tangible property in State in same manner as individuals. (Statute cited.)

CORPORATE TAXATION.

A similar treatment was given to the subject of taxation, and a similar table prepared for each State with regard to corporate taxes and tax records. This table is designed to show, in briefest form, the entire scheme of corporate taxation in force in the State, together with the nature, contents, and custody of all records or returns required for purposes of taxation. An example of such table follows:

Corporation taxes and tax records.

——— (Name of State.)

A. Subject taxed.	B. Purpose.	C. Where listed, returned, recorded.	D. Nature of record.	E. Corporations affected.	F. Remarks.
1. Real estate.	State and local.	Where located.	List filed with assessor.	Domestic, foreign.	Valuation every fourth year (1903), at one fifth fair value.
2. Personalty.	do	County, town, or district of principal place of business.	do	do	Tangible property only, except in making newspaper, coal-mining, and stock-breeding companies. These are assessed on tangible and intangible values, including franchises and tax on corporate excess. On one-fifth fair value.
3. Stock per se (taxed to the corporation).	do	do	Detailed return to assessor, who forwards to county clerk, who forwards to State auditor.	Domestic	On one-fifth of fair value of corporate excess. This tax does not apply to manufacturing, newspaper, coal-mining, and stock-breeding companies.
4. (Taxed to holders.) (Individual tax list here.)	do	Where holder resides.	List filed with assessor.	Foreign	Foreign stock taxed under 2.
5. Bonds	do	do	do	Domestic, foreign.	Taxed under 2.
6. Initial charter fee or license.	State	Secretary of state.	Application for charter.	do	*Domestic:* Graded on authorized stock. *Foreign:* Graded on proportion of stock represented by property and business in State.
7. Franchise					None.
8. Occupation					None.

9. *General remarks:* The corporate excess return is made to assessor, who returns it to county clerk who sends it to State auditor, who lays it before State board of equalization, who thereupon values such corporate excess and certifies same to local tax officers. Telegraph companies are taxed on corporate excess, but return to State auditor.

Thus far compilations and tabulations of the character described have been made for the following States and Territories:

Arizona.
Arkansas.
Connecticut.
Delaware.
District of Columbia.
Georgia.
Idaho.
Illinois.
Kansas.
Kentucky.
Louisiana.
Maine.
Maryland.
Massachusetts.
Michigan.
Minnesota.
Mississippi.
Missouri.
Montana.
Nebraska.
Nevada.
New Jersey.
North Dakota.
North Carolina.
Oklahoma.
Rhode Island.
South Dakota.
Texas.
Utah.
Vermont.
Washington.
Wisconsin.

FIELD INVESTIGATIONS.

The foregoing outline describes the work of the Bureau in collecting, digesting, and tabulating the statute law relating to corporations.

But to understand fully existing corporate conditions, it was necessary also to consider the actual enforcement of this statute law, as illustrated by the practical operation of the corporation laws of given States.

Accordingly early in the year an investigation was begun, and has since been carried on, by special agents of the Bureau of Corporations at the several State and Territorial capitals. The specific objects of this investigation, which have been in a large measure achieved, were as follows:

First. The collection of every item of information concerning the more important corporations, joint-stock companies, and corporate combinations presumptively engaged in interstate or foreign commerce, chartered by a given State, and disclosed by the official records of the State.

Second. The ascertainment of the actual workings and practical efficiency of the State laws, so far as they are designed to secure an official record showing the character, organization, membership, control, capitalization, property, or operations of corporations within the State.

Third. To show the exact nature and extent of the information concerning corporations to be had from official sources.

Fourth. The general course of incorporation in the State, and all legislation affecting the same; also the general policy of the State toward corporations, domestic and foreign, as exemplified by its laws and the manner of their enforcement; and, further, such special or unusual laws, if any, regarding corporations as might be found in operation.

EXAMINATION OF RECORDS.

The official record of any given corporation will be found usually to consist of any one or more of the following documents, filed or recorded with the proper officer of the State:

1. Articles of association, certificate of incorporation, charter.
2. Certificate of change—
   - in the name;
   - statutory agent or attorney;
   - location of statutory office;
   - location of place of business.
3. Certificate of amendment—
   - relating to classes of stock or par value of shares;
   - increase or decrease of stock;
   - nature and amount of indebtedness;
   - number, powers, or duties of directors or officers;
   - objects, purposes, or business;
   - charter provisions or powers in other particulars.
4. Certificate of sale or transfer—
   - either voluntary, by agreement, or consent;
   - or involuntary, by foreclosure, forfeiture, or otherwise;
   - of franchises;
   - of property.
5. Certificate of merger or consolidation.

6. Certificates, miscellaneous—
showing issue of corporate stock;
payment of capital stock;
creation or increase of indebtedness;
appointment of statutory agent or attorney;
location of principal office or place of business;
acceptance of statutes and constitution;
renewal or extension of charter rights;
dissolution or surrender of charter.
7. Reports or returns, general—
to secretary of state;
other State officers.
8. Report or returns, for purposes of taxation—
to State officers;
county officers;
municipal officers.

The agent was instructed to examine the laws of the State to which he was assigned, and note all provisions relating to the form, contents, and custody of such of the above-mentioned documents as might be required by that State, and then, with regard to the principal corporations chosen for investigation, to examine every paper and document, filed or recorded, concerning each corporation separately, taking up each paper in chronological order, noting the date of filing and making an abstract of its contents under appropriate heads. By this means all the information relating to each corporation examined disclosed by the official record of the State was collected, and in such form as to exhibit the force and effect of the State laws in actual practice.

SPECIFIC CORPORATIONS EXAMINED.

For every State visited a list of corporations organized therein was prepared and furnished to the agent for examination. This list was designed to include, so far as could be ascertained in advance, all the more important corporations organized in the State and engaged in interstate or foreign commerce, typical either of the State's industries or laws. Common carriers subject to the jurisdiction of the Interstate Commerce Commission were not embraced in the investigation. Public-service corporations, so called, trust companies, and banks were considered only incidentally, chiefly with regard to matters of taxation. The corporations thus selected, for all the States visited, whose official records have been examined and abstracted, number over 1,500, and include the larger part of the more important industrial and commercial corporations, joint-stock companies, and corporate combinations in the United States.

CORPORATE TAXATION.

That part of the investigation devoted to the matter of corporate taxation was made as thorough and exhaustive as the subject allowed. It was designed to secure the fullest possible information concerning each of the various systems of taxation in use in the several States and Territories, so far as corporations, both domestic and foreign, were affected thereby. It comprehended a careful compilation of the tax laws and a study of their actual operations in each State, as a whole, and in its various political and territorial divisions. The agents of the Bureau were instructed to obtain copies of reports or

returns of every kind required of corporations for the purposes of taxation, both State and local, and copies of tax lists, levies, appraisals, receipts, certifications, or other documents forming part of the machinery used in the laying and collection of taxes.

These directions have been carefully followed, and the Bureau is in possession of a complete set of such papers from every State visited. The amount of revenue derived from corporate taxation in the State or Territory, the sources of such revenue, and the amount received from each source were also ascertained. In every State or Territory visited the exact character and extent of the information to be had from any statements, reports, or returns of some of the more important of such corporations, particularly those required for the purposes of taxation, were copied or abstracted. In addition to this, a complete list of foreign corporations admitted to the State to do business was prepared, showing the name, capital stock, and home State of each corporation listed. These lists are valuable in this, that they will aid the Bureau in discovering what corporations are engaged in interstate commerce, and, therefore, within the jurisdiction of the Bureau of Corporations.

The material, therefore, collected from each State visited in the course of the investigation consists of—

First. Abstracts of the records of specific domestic corporations.

Second. Abstracts of the records of specific foreign corporations.

Third. List of foreign corporations admitted to the State to do business.

Fourth. Official forms of all corporate documents required or permitted to be filed.

Fifth. Official publications of every kind dealing with corporations.

Sixth. Transcripts of all records or returns used in connection with corporate taxation, taken from typical originals.

Seventh. A special report made by the agent, covering every feature of the work in detail, and containing, among other things, an account of the general course of incorporation in the State, an account of the practical effect and operation of the various statutes in force, and an account of the system of taxation, general and local, in its actual operation.

STATES VISITED.

Beginning with those States whose laws are most frequently resorted to by promoters of corporate enterprises, the following States and Territories have been visited in the course of the investigation above described.

Arizona.	Kentucky.	Ohio.
California.	Maine.	Pennsylvania.
Colorado.	Massachusetts.	Rhode Island.
Connecticut.	Michigan.	South Dakota.
Delaware.	Minnesota.	Texas.
Illinois.	Missouri.	West Virginia.
Indiana.	Montana.	Wisconsin.
Iowa.	New Jersey.	
Kansas.	New York.	

II. CONSIDERATION OF CONSTITUTIONAL POWERS AND RESTRICTIONS.

With this end in view the attorneys of the Bureau have made exhaustive examination and research of judicial decisions bearing upon such constitutional questions, and have prepared a large number of

memoranda thereon. The more important of the subjects thus treated are as follows:

1. Powers of the Bureau.

Province and duty of the Bureau of Corporations and the power and authority of the Commissioner.

Procedure by the Commissioner of Corporations to compel attendance of witnesses and the production of documentary evidence.

Analysis of decisions of the United States Supreme Court in cases involving provisions of section 12 of the interstate commerce act: Interstate Commerce Commission *v.* Brimson (154 U. S., 447); Brown *v.* Walker (161 U. S., 591), and Interstate Commerce Commission *v.* Baird (194 U. S., 25), all relative to the power to compel attendance of witnesses.

Examination and annotation of the interstate commerce act, section 12, and an act in relation to testimony, etc., relative to the power therein given to compel attendance of witnesses.

2. Interstate Commerce.

Judicial definitions of interstate commerce; examination of the question, What is interstate commerce, as determined by the courts?

Memorandum showing corporations subject to provisions of act creating Bureau of Corporations.

Digest of cases reported in Interstate Commerce Commission reports on points relating to the work of the Bureau.

Cases showing the relation between commerce and production or manufacture.

Power of Congress as to foreign commerce.

Prohibitions and restrictions of commerce, as exemplified by Federal statutes applying and decisions upholding these powers.

Statutes actually prohibiting commerce.

3. United States Corporations.

The power of Congress to create corporations.

The power of Congress to create corporations, and the right of the States to tax national corporations.

The power of Congress to create corporations engaged in foreign and interstate commerce and to regulate all corporations so engaged.

Rights of national corporations in the States: Manufacturing corporations.

Digest of national-bank cases in United States and Federal reports (omitting tax cases).

Power of Congress to grant to its corporations the right of eminent domain.

Digest of cases of Federal taxation and State-bank issues.

National regulation of interstate commerce, based upon a license system.

4. State Powers in Relation to Interstate Commerce and United States Corporations.

State taxation and regulation of corporations: National banks, railroad companies, and telegraph companies.

State control of interstate commerce by stipulations in charters.

State regulation of foreign corporations.

Maximum limits of the police powers of the States in connection with interstate commerce.

Abstract of United States Supreme Court decisions involving question of State taxation of corporations engaged in foreign and interstate commerce, with digest.

State's right of taxation of corporations engaged in interstate and foreign commerce; how affected by Federal organization, and control of such corporations.

State taxation of franchises of corporations engaged in interstate commerce.

State control of interstate commerce and corporations engaged therein.

Delegation to the several States of power to regulate commerce.

5. Foreign Corporation Law.

Origin, organization, powers, and duties of Board of Trade of England.

Management and control of corporations and organizations: England and the United States.

English companies' acts: Topical analysis, with schedules and tables; orders and rules for winding up companies.

DIGEST OF "ANTITRUST" LEGISLATION.

The Bureau has considered carefully and at length the various Federal and State statutes dealing with illegal industrial combinations, the so-called "antitrust" laws, and has prepared for publication a volume upon this subject.

Summarized briefly, this publication will contain the following subject-matter:

A general survey of Federal and State "antitrust" laws, with especial reference to their historical growth and operation.

Tables of "antitrust" laws, showing in tabular and condensed form, so as to be readily available and easily comparable, the provisions of such laws, including the sectional distribution of State laws; Federal decisions under the Sherman antitrust act, and cases arising in Federal and State courts under State "antitrust" laws.

A detailed description of Federal and State "antitrust" legislation by States, with a discussion of their operation and effect.

A compilation in full of Federal and State "antitrust" laws.

The Sherman antitrust act annotated and discussed.

Digest of cases arising under the Sherman antitrust act.

A digest and discussion of cases involving common-law principles as to combinations in restraint of trade.

Federal and State laws against conspiracy.

A bibliography of the literature upon this entire subject.

ECONOMIC INVESTIGATIONS.

Prior to the beginning, in March, 1904, of the investigation of the meat-packing industry, the Commissioner did not undertake to secure information regarding corporations and industrial combinations by addressing inquiries directly to them. It was considered necessary to lay a foundation on which such direct investigations could be intelligently and effectively conducted. With this object the Bureau has aimed to compile from sources already existing all available information regarding certain leading combinations, and to analyze carefully the material so gathered. In this way it has been possible to form preliminary judgments regarding the economic and financial practices and effects of the combinations investigated, and to determine the lines of further original inquiry, both with respect to the combinations studied in this special manner and, more broadly, with respect to combinations in general.

Digests of information of the character described have already been prepared, or are in course of preparation, concerning several corporations and combinations. The general scope of these digests is shown in the condensed outline below. This outline is followed generally in each investigation, with such modifications as the special nature of the material may dictate.

Outline for Digests of Information.

Organization:

Formal description of present corporation or combination—State of incorporation, charter, form of organization, nature of business, officers, and directors.

History of organization, constituent or antecedent corporations, etc.

Capitalization:

Formal statement of amount of securities, dividends, and market value of shares.

History of promotion and capitalization—basis of issue of securities, profits of promoters, etc.

Capitalization in relation to tangible value and earning capacity of plants.

Financial reports of the corporation.

Control of plants and production—competition:
History and general description of concerns and plants controlled.
Control of output. Character and effectiveness of competition.
Restriction of output.
Competitive methods—local price cutting, railroad discriminations, etc.
Prices and cost of production:
Prices—statistics and analysis; comparison with raw material and by-products; effect of combinations and of other influences.
Cost of production and profits.
Economies effected by combination.
Tariff, exports and imports:
Description of present and earlier duties.
Imports and exports.
Production, costs, and productive conditions in foreign countries.
Tariff policy of foreign countries.
Comparative foreign and domestic prices.
Export prices of American products.
Labor conditions.

On the basis of the general study of available information concerning their business, preliminary outlines of inquiries to be addressed directly to the companies have been prepared.

In addition to these more extended investigations many briefer reports and memoranda have been prepared regarding individual corporations, or regarding methods of investigation, sources of information, and the like.

INVESTIGATION OF BEEF INDUSTRY.

On March 18, 1904, a resolution was passed by the House of Representatives, directing the Secretary of Commerce and Labor to investigate the alleged beef combination. The Secretary of Commerce and Labor directed the Bureau of Corporations to conduct the inquiry called for in the resolution. An extended special report on this subject will shortly be submitted.

Special agents, with clerical assistants, have been constantly in the field since April. They have secured comprehensive statistics, chiefly relating to the prices of cattle and of beef, from the records of all the companies in the alleged combination, and also from independent packers, commission men, retail dealers, and other sources. They have interviewed a large number of independent packers, commission men, cattle raisers, meat dealers, and other persons, with a view to ascertaining facts and opinions relating to the existence of a combination, the movements of prices, the causes of such movements, and the general conditions of the cattle and beef industry.

THE INSURANCE WORK OF THE YEAR.

In the last paragraph of section 6 of the act there is included a clause in which a special direction is contained covering the question of insurance. A careful compilation of the insurance laws of the various States is being made, based upon a uniform outline. For this purpose the following outline was prepared. Under it the laws relating to insurance in each State are being compiled, and a given topic in insurance can be readily compared for every State by reason of the arrangement of the plan under which each is compiled.

General outline adapted to all of the States, covering the important provisions relating to insurance legislation.

ARTICLE I.

SUPERVISION.

Index No.

I. In whom reposed.
1 (a) Official title.
2 (b) Qualifications.
3 (c) How selected.
4 (d) Term of office.
5 (e) Compensation.
6 (f) Bond.
7 (g) Seal of office.
8 (h) Office force and duties.
II. Expense of.
9 (a) How defrayed.
III. Powers and duties of commissioner.
(a) Certificate of authority.
10 (1) To agents.
11 (2) To companies.
12 (3) Revocation of.
(b) Examination of companies.
13 (1) Scope of.
14 (2) When made,
15 (3) Publication of.
16 (4) Expense of.
17 (5) Penalty for refusal to submit to.
18 (c) Fees, taxes, and charges.
(d) Statements of companies, blank forms for.
19 (1) To prescribe.
20 (2) To furnish.
(e) Report of commissioner.
21 (1) To whom and when made.
22 (2) Contents of.
23 (f) Proceedings against companies.

ARTICLE II.

PROVISIONS APPLICABLE TO ALL COMPANIES.

24 I. Advertisements, requirements as to.
II. Agent.
25 (a) Definition of.
26 (b) Embezzlement by.
27 (c) Personal liability of.
28 (d) Resident agent law.
III. Capital.
29 (a) Amount of.
30 (b) Investment of.
31 (c) Impairment of.
32 IV. Contract of insurance defined.
33 V. Corporate name and location.
VI. Deposits.
34 (a) Amount of.
35 (b) Investment of.
36 (c) With whom made.
37 (d) Withdrawal of.
38 VII. Insurable interest.
39 VIII. Limit of single risk.
40 IX. Misrepresentation and fraud.
41 X. Real property, restrictions as to holding.
42 XI. Reinsurance, requirements as to.
43 XII. Emergency, reinsurance reserve, or guaranty fund, and the valuation of policies.
44 XIII. Restrictions as to engaging in any business other than insurance.

Index No.

45 XIV. Service of process.
XV. Statements and reports by companies.
46 (a) With whom and when filed.
47 (b) Contents of.
48 (c) Publication of.
49 XVI. Suits, limitation of time of instituting.
50 XVII. Taxation.
51 XVIII. General penalties.

ARTICLE III.

PROVISIONS APPLICABLE TO FOREIGN COMPANIES.

I. Admission of, requirements as to.
52 (a) Capital.
53 (b) Deposits.
54 (c) Documents to be filed with the commissioner.
55 (d) Appointment of attorney.
56 (e) Restriction as to removal of suits.
57 (f) Other requirements.

ARTICLE IV.

PROVISIONS APPLICABLE TO DOMESTIC COMPANIES.

58 I. Organization and incorporation.
59 II. Subject to general pertinent incorporation law.
60 III. Dividends, or distribution of surplus.
61 IV. Consolidation of.
62 V. Personal liabilities of members, stockholders, directors, trustees, or officers.
63 VI. Insolvency and receiverships.

ARTICLE V.

PROVISIONS APPLICABLE TO FIRE AND MARINE INSURANCE COMPANIES.

64 I. Definitions of, or limitations as to business.
65 II. Anticoinsurance.
66 III. Anticompact or antitrust.
IV. Cancellation of policy.
67 (a) Prohibited without notice.
68 (b) Premiums to be returned.
69 V. Duration of policy, limitation as to.
70 VI. Fire, notification in case of.
71 VII. Insurance in unauthorized companies.
72 VIII. Policy must designate the kind of company.
73 IX. Policy to contain conditions in full.
74 X. Standard policy.
75 XI. Valued policy law.

ARTICLE V (a).

76 PROVISIONS APPLICABLE TO LLOYD'S COMPANIES.

ARTICLE VI.

PROVISIONS APPLICABLE TO LIFE, HEALTH, AND ACCIDENT INSURANCE COMPANIES.

77 I. Definitions of, or limitations as to business.
78 II. Application, copy of, to be furnished applicants.
79 III. Beneficiary's exemption.
80 IV. Change of beneficiary.
V. Discriminations prohibited.
81 (a) Antirebate.
82 (b) Against negroes.
83 (c) Other discriminations.
84 VI. Forfeiture of policies without notice.
85 VII. Incontestability of policies.

Index No.		
86	VIII.	Medical examination, requirements as to.
87	IX.	Minimum premium to be charged.
88	X.	Registered policies and annuity bonds, requirements as to.
89	XI.	Surrender value of lapsed or forfeited policies.

ARTICLE VI (a).

PROVISIONS APPLICABLE TO ASSESSMENT LIFE COMPANIES.

90	I.	Definition of, or limitations as to business.
91	II.	Designation of principal office.
92	III.	Exemption of certain societies.
93	IV.	Age limit.
94	V.	Notice of assessment.
95	VI.	Policy to state maximum amount.

ARTICLE VI (b).

PROVISIONS APPLICABLE TO FRATERNAL BENEFICIARY SOCIETIES.

96	I.	Definition of, or limitations as to business.
97	II.	Age limit.
98	III.	Constitution and by-laws.
	IV.	Exemptions.
99		(a) From general insurance law.
100		(b) Of certain societies.
101	V.	Payments of benefits, endowments, etc., regulation as to.

ARTICLE VII.

SPECIAL LAWS.

102	I.	Anticoinsurance.
103	II.	Anticompact, or antitrust.
104	III.	Antirebate.
105	IV.	Fire marshal.
106	V.	Reciprocal or retaliatory.
107	VI.	Resident agents.
108	VII.	Standard policy.
109	VIII.	Valued policy.

ARTICLE VIII.

SCHEDULES.

110	I.	Schedule showing the amount of capital, deposits, and the date on which the annual reports are required.
111	II.	Schedule showing the amount of fees, taxes, and charges required.

Under this plan compilations have been made of the laws of the following States:

Connecticut.	Massachusetts.	New York.
District of Columbia.	Michigan.	Ohio.
Florida.	New Hampshire.	Oklahoma.
Kansas.		

Letters in the following form were sent to the commissioners of insurance or other insurance officials of the several States:

Under the provisions of the act of Congress establishing the Department of Commerce and Labor—a copy of which is herewith inclosed—it is the duty of the Bureau of Corporations to gather, compile, publish, and supply useful information concerning certain corporations, specific mention being made of corporations engaged in insurance.

In pursuance of these requirements it is desired to obtain certain information from the constituted authorities of the several States and Territories, and you are requested to supply the following:

(1) In what official board or commission is reposed the supervision and regulation of insurance in the State of———?

(2) What are the powers and duties of said official or body?

(3) What distinctions are made between the several kinds of insurance in regard to the duties and obligations of the companies writing the same and their supervision and regulation by the State?

(4) What distinctions are made between foreign and domestic companies respecting fees, taxes, and regulations?

(5) Copies of existing statutory enactments relating to the organization, conduct, management and requirements of insurance corporations and the supervision and regulation of the same by the State.

(6) Publications of the State containing the reports or returns made by or regarding such corporations, and copies of the blank forms used; or, if there are no such publications, what is required of such corporations respecting reports or returns.

(7) A list of insurance companies, foreign and domestic, within the State, giving the name, location, and character of each, and the officer to whom correspondence should be addressed.

(8) Information is requested and reference thereto is desired if there are any of the following insurance laws in force in the State of ———: Valued policy laws, anti-compact or anti-trust laws, standard policy laws, resident agent laws, retaliatory or reciprocal laws.

It is further desired to obtain for the Bureau of Corporations all the information respecting the subject of insurance as dealt with in the State of ——— that may be in the possession of the various State officers and which may be properly afforded. Attention is invited especially to section 6 of the inclosed act, which authorizes the Bureau to obtain the information asked.

Inclosed you will find frank envelopes for replies, andfranks under which can be sent such printed matter herein requested as you may have.

This met with general response and placed the Bureau, so far as the insurance world is concerned, in an attitude that met the approval of those interested in this great business. These replies contain items of information of great value.

With a view of making an investigation of the effects of the valued policy law agents of the Bureau visited several States which have such law. The individuals interviewed included not only the officials of insurance companies, but also State insurance commissioners, officers of boards of underwriters and of associations of business men, bankers, insurance agents, etc. Their main object was to ascertain, if possible, the practical effects of the valued policy law as in force in the several States. This, however, was not the only object intended to be achieved.

This investigation served to bring this Bureau into closer touch with the prominent insurance officials and the interests that they represent. The interviews served the purpose of acquainting these officials with the general purposes for which the Bureau was organized, and its jurisdiction in gathering information relating to insurance. A great deal of information was secured, having both a positive and a negative value. It acquainted the Bureau with the methods of operation of certain great companies, their systems of keeping books, the character of the information possessed by them, and those things that they lack.

This Bureau has also made an investigation in other branches of the Government to ascertain what publications, statistical or otherwise, have already been prepared that may be useful for its work. Reports are frequently received from our foreign consuls that contain items of interest on insurance matters, and arrangements have been made to have such reports brought to the attention of the Bureau.

A large number of publications have been received from insurance officials of the various States bearing upon insurance. A number of periodicals issued in the interest of this subject have been carefully read, clipped, and indexed and important compilations and memoranda have been prepared and submitted on this subject.

COMPLAINTS.

As a natural result of the establishment of the Bureau, a number of complaints have been received by it from private persons: (a) Giving information on corporate matters; (b) asking legal or financial advice; (c) asking assistance against restraint of trade, exorbitant prices, or unfair competition; (d) asking remedial action by the Bureau in matters relating to internal management of specific corporations, e. g., to compel the issuance of reports or furnishing of information to the complainant on the business of such corporations. A classification of these complaints is as follows:

Subject-matter.	Number of complaints.
Stockholders' rights	24
Restraint of trade	17
Unfair competition	5
Exorbitant prices	2
Insurance	3
General information only	1
Matters wholly foreign to Bureau's work	5

In dealing with such complaints the Bureau has acted upon the theory that it could offer no remedial action in specific cases, could not enforce publicity for merely private ends, could take no steps toward the enforcement of penal law (e. g., the antitrust law) further than to refer the complainant in appropriate cases to the Department of Justice, and could give no legal or financial advice.

Believing, however, that such complaints have a distinct value to the Bureau, both in furnishing specific information as to given corporations, and also in showing generally the weak points of the present commercial system, it has been the policy of the Bureau to indicate to the complainants the desire of the Bureau for information.

General Policy.

The study of the law and industrial conditions, as above outlined, resulted in the adoption of the following general policy regarding the Bureau and the conduct of its work:

As the Commissioner is not charged with the enforcement of any law nor with the prosecution of persons or corporations alleged to be or found to be violating any law, the work of the Bureau is primarily an inquiry into the industrial and legal methods used by the agencies engaged in interstate and foreign commerce, and the purpose of such inquiry to afford accurate knowledge of industrial conditions upon which there may be based intelligent legislative action.

In the investigation of special corporations the Commissioner will necessarily acquire knowledge of business facts the publication of which would be an infringement of private rights. The method of

reporting and making public the results of these investigations affords a means, through the President, for protecting private rights. In this particular the method of procedure is similar to the action and reports of the Comptroller of the Currency regarding national banks. There will thus be presented to Congress all relevant facts except such as would afford to any corporation information which would injure the legitimate business of a competitor and destroy the incentive for individual superiority and thrift.

While the purpose of inquiries and special investigations is not to discover violations of Federal statutes, yet, if facts are found showing such violation, they will be reported as other facts to the President for such consideration and action as may be appropriate or necessary.

Under present industrial conditions, secrecy and dishonesty in promotion, overcapitalization, unfair discrimination by means of transportation and other rebates, unfair and predatory competition, secrecy of corporate administration, and misleading or dishonest financial statements are generally recognized as the principal evils. It is admitted that the chief difficulty in the way of providing ample remedies has been the conflict between Federal and State authority as to jurisdiction over many of the acts of great industrial agencies, and the uncertainty of the extent of regulation exercised or to be exercised by the Federal Goverment over agencies engaged in both State and interstate commerce.

The immediate work is, hence, not to prove the existence of such evils and difficulties, but to find possible remedies for them. The remedies must not be simply to destroy existing bad conditions—mere destruction affords only temporary relief—but they must provide something better to take the place of what is changed. The imposition of severe penalties will not end industrial evils. We must find and remove their cause, leaving only the extreme or exceptional cases to be dealt with by criminal statutes.

The Government should secure means for fair business competition, freedom from unjust discrimination, such publicity of corporate organization and management as will disclose real financial worth and methods, should provide a jurisdiction broad enough to meet existing conditions, and then should fully protect the person or corporation obeying the law and promptly punish the violator of the law.

The facts upon which remedial legislation must be based are in the possession of persons and corporations engaged in business—some have been given to the public, others have been incidentally furnished through judicial and legislative proceedings, and others have been held as business secrets. As to the first two classes the Bureau has been systematically collecting them from all available sources; as to the last class special inquiries have been made or are being made from particular corporations. In dealing with this class of facts it is recognized that there is a fair ground for discussion as to whether certain questions are infringements upon private rights; hence the following method of procedure has been adopted:

Inquiry is made directly from the persons or corporations under investigation; if it be determined that the Government is entitled to the information, it must be given voluntarily or the compulsory process of the statute will be invoked; if the Government is not entitled to the information, then no detective method will be used to discover it.

There has been no attempt to define the scope of the inquiry to be made, nor to limit it to certain classes of facts. All facts which will give information regarding interstate and foreign commerce, or will assist Congress in regulating such commerce, are subjects of legitimate inquiry.

One line of inquiry concerning which question has been raised is as to the cost of production of articles used in or subjects of interstate and foreign commerce. So far it has not been necessary to test this question in court, but it is believed that aside from any other reason the question is proper because of the power of Congress to impose tariff duties in the regulation of commerce. The ideal tariff duty is the difference between the cost of production at home and abroad; hence Congress has the right to know what is the cost of production. Furthermore, it is claimed that the tariff gives an unfair advantage to corporations and persons engaged in the manufacture and distribution of protected articles which are the subjects of interstate and foreign commerce. Congress has the right to know whether this be true or not, and this Bureau affords a most appropriate and efficient means for obtaining such information.

In brief, the policy of the Bureau in the accomplishment of the purposes of its creation is to cooperate with, not antagonize, the business world; the immediate object of its inquiries is the suggestion of constructive legislation, not the institution of criminal prosecutions. It purposes, through exhaustive investigations of law and fact, to secure conservative action, and to avoid ill-considered attack upon corporations charged with unfair or dishonest practices. Legitimate business—law-respecting persons and corporations—have nothing to fear from the proposed exercise of this great governmental power of inquiry.

The above outlined general statement of the objects, powers, and work of the Bureau leads to the consideration of the legal conditions which constitute the problems before the Bureau.

LAWS AFFECTING COMMERCIAL CONDITIONS.

A number of classes of statutes are now applicable to commercial conditions. These classes are considered in detail as follows:

(*a*) Corporation law.
(*b*) Anti-trust laws.
(*c*) Unfair competition laws.
(*d*) Tax laws.
(*e*) General laws, including police regulations, factory legislation, and rate-fixing commissions.

CORPORATION LAW.

The greater portion of business is transacted under the corporate form. It is obvious that the corporate form is the result of economic necessity, and that its present predominance will inevitably tend to increase.

Historical development of corporation law.—The need of essential reform in corporation law is admitted. Compared with other branches of law, corporation law is relatively new and untried—an experiment only just begun—while general business laws have passed through a long process of evolution. Its development has been abnormally rapid

in some directions by imperative economic forces. In the haste of its creation it has been molded disproportionately by special interests, has grown extensively in special directions, and has not taken the form necessary to adapt it permanently for the proper protection of all the interests involved.

A study of the present body of corporation law shows the impress of the forces that have shaped it. First in prominence is the force represented by the masters of industry, the interests that are peculiarly connected with production, transportation, and exchange. Second, the purely financial interests as distinguished from production, in which class the organizer or promoter, so called, is conspicuous. Third, the creditor class, whose interest is in the security for loans or credit; and in somewhat similar position those stockholders who under present forms of combination, by preference or other device, have taken stock in exchange for property, and, in effect, consider themselves creditors rather than responsible owners of corporate stock. Fourth, the labor interests, and finally, the State as a taxing body and, to a very limited extent, as a guardian of public welfare. The interests of the consumer have so far had very little effect upon legislation of this sort.

In brief, the evolution of corporation law, as regards the properly balanced interests of the entire community, has been accidental rather than designed.

Fundamental theory of corporation law.—The law of corporations is based upon the establishment of a *form* of doing business; *i. e.*, the creation of an artificial entity, the conferring upon it of such powers as are necessary to give it proper business efficiency, while placing upon it such restrictions as will properly safeguard the interests of those peculiarly concerned in the corporation, as well as the public.

Peculiar characteristics resulting in peculiar evils.—A study of corporation law makes it clear that many of the existing evils of commercial conditions are directly due to certain features of corporation law peculiarly characteristic of the corporate form. The peculiarities may be summarized as follows:

(*a*) Legal immortality, or permanence of succession.
(*b*) Impersonal nature.
(*c*) Divisibility of interest by creation of stock.
(*d*) Limited liability.
(*e*) Artificial character; existence by act of the State.

Of these features the divisibility of interest and limited liability have far-reaching effects on commercial conditions, as follows:

Divisibility of interest: This is of primary importance. It results in majority rule; allows the abuse of minority interests; greatly reduces, and often eliminates, the sense of personal responsibility on the part of the managers; allows the exploiting of one company for the benefit of another; permits divergent and clashing interests within the company, by the creation of special classes of stock; in connection with the limitation of liability it has brought into existence the small investor, he who has no accurate source of information, and whose necessary ignorance of business affairs is a standing temptation to "insiders;" permits the creation of stock and its use as a sort of currency; taken in connection also with the transferability of stock interests, it allows speculative manipulation; creates great practical confusion in the incidence of taxation.

Limited liability: This renders possible very large enterprises;

encourages over-capitalization; taken in connection with divisibility of interest, reduces greatly, and often destroys, the interest of the managers in the success of the business and their feeling of personal responsibility therefor, and affects greatly the moral factor in business management; allows extreme concentration of commercial power; reduces the security of creditors.

Ground for governmental regulation.—Governmental action having created the artificial corporate form with the above outlined peculiar characteristics, it is logical and necessary that governmental regulation of corporations should be much more stringent and detailed than the regulation of individual businesses. The concentration of business that has resulted from the use of the corporate form has produced entities that are almost equal in power to the state itself; that can meet the state on equal terms and influence it accordingly. By their size and legal permanence and their peculiar privileges they have crossed the line that divides private from public interests and their operations affect the public in much the same manner as the operations of government.

The great reduction of personal responsibility that has followed the corporate form, the divisibility of stock interests, and the separation of the laborer, stockholder, and creditor from contact with and control of the instruments of industry, has left a very large gap to be filled by government control, and has left more or less unprotected various important interests which must have the supervision and intervention of the state for the following purposes:

(a) To protect property rights in corporations held by those now unable to protect themselves by reason of lack of information or power.

(b) To protect those dealing with corporations as employees, creditors, or consumers.

(c) To protect the public from the abuse of great economic power coupled with little personal responsibility.

The economic powers of the Government and of public officers are checked by a corresponding publicity and responsibility to the voters, while the economic powers of great corporations, although often governmental in their size and scope, have no such publicity or responsibility.

(d) To protect the Government itself from the pressure of great commercial and financial powers directed upon it for the attainment of purely private ends.

THE PRESENT SYSTEM OF INCORPORATION BY STATES.

Investigation of the State corporation laws has not been completed, but enough facts have been gathered to make possible a number of general conclusions as to this system. Substantially all the corporations of to-day are the creatures of the different States. This is so to such an extent that for all practical purposes it is proper to say that the corporate business of the country is carried on under the "State system."

The present situation of corporation law may be summed up roughly by saying that its diversity is such that in operation it amounts to anarchy. The States which by reason of their commercial activity are important differ very widely in the principles upon which their corporation legislation is based.

This situation, taken in connection with the principle of the comity of States, has had a singular and far-reaching effect on commercial conditions. This principle of comity has had the practical result of giving to the organizers of a proposed corporation the choice of all the corporation laws of the various States. Many such organizers represent one of the peculiar interests above referred to, namely, that of the financial or speculative type. Each State naturally desires, chiefly for the purpose of revenue, to attract incorporation to itself by lax corporation laws. The ground has been cut from under the feet of objectors to such laws by the unanswerable proposition that if incorporators or organizers were not accommodated in the given State they could incorporate in a more complacent State and easily come back to the first State to do business. The logical result has been an inevitable tendency of State legislation toward the lowest level of lax regulation and of extreme favor toward this special class of incorporators, regardless of the interests of the other classes properly concerned.

A further peculiar phenomenon also arises—that, as to the vast majority of business done, the corporation doing it is a *foreign* corporation. The ordinary large corporation does only a small proportion of its entire business in the State which chartered it. All the rest of its business it does as a foreign corporation, and under the peculiar conditions applicable thereto.

This is largely the natural result of subjecting concerns whose area of operations covers many States to the legal conditions imposed by *one* out of those many States. In other words, matters which rightly affect the *whole* are, to a certain extent, directed and shaped by a *small part* of the community.

The net result of this State system is thoroughly vicious. In the bidding of State against State for corporation revenue, only one of the numerous interests involved in corporate business is regarded. The proper relation of the corporation to the State is almost wholly lost sight of in "broad" corporation laws. Corporations themselves are hampered by the "foreign corporation" relation which they must hold toward most of their business. Constant change and instability of law is inevitable, and finally, in the struggle for preferences, privileges, and discriminations, the two contestants, to wit, the corporation which seeks and the State which should withhold, are unequally balanced, and upon the wisdom and patriotism of a single State is placed the pressure of forces that are national in their power.

ANTITRUST LAWS.

A careful compilation and tabular summary has been made of all the Federal and State "antitrust" legislation. The word "antitrust" in this connection has of necessity been loosely used. This legislation can be divided into two classes of subject-matter, the one which is aimed at the prohibition of monopoly and restraint of trade, and which is more properly "antitrust," and the other, which is aimed at improper rebates, discrimination, and unfair competition, and which has no necessary connection with combinations.

The theory of the first class of "antitrust" legislation is the prevention of monopoly and the maintenance of a condition of competition.

Taken as a whole, this legislation (with a few marked exceptions) has been singularly futile. It seems likely that the reason for its failure is due to two facts, (a) that it is an attempt to stop the operation of strictly economic law by statutory enactment, and (b) the attempt to maintain a state of competition by prohibiting all combination, reasonable or unreasonable, is wrong in principle.

Apparently the only exceptions to this conclusion lie in the case of public-service corporations which are, by their nature, largely agents of the State, and exercise powers not granted to the ordinary corporation or individual.

UNFAIR-COMPETITION LAWS.

The second class of legislation, usually a part of "antitrust" laws, but having no necessary connection with combinations or trusts, is that which prohibits rebates, discriminations, and unfair competition. This legislation is based on an entirely different principle and is fundamentally correct. It is aimed not at the restraint of combination as such, or the maintenance of competition, but at regulating the *methods* of competition. It recognizes the irresistible tendency toward combination, and its purposes are to make certain that combination is reached only through just, fair, and proper means. Recognizing that the tendency to combine can not be stopped by statute, its object is to see that this process shall be attended with as little injustice as may be, and to this extent is correct in theory.

TAX LAWS.

Other general laws affecting corporate business are State tax laws, which are at present in a state of great confusion, based upon wrong or conflicting principles, resulting frequently either in double taxation or in total escape from taxation, and being often so obscure and complex as to defy interpretation, even by the State officials charged with their execution.

MISCELLANEOUS LAWS.

A further class includes the general and miscellaneous legislation, instances of which are laws establishing rate-fixing commissions, "factory acts," general forms of business, etc., and a large class of legislation that is based upon the police power.

COMPARATIVE EFFICIENCY OF VARIOUS CLASSES OF STATUTES.

While this study of the laws affecting corporations makes it apparent that many of the evils of the present situation have been created by statute and can be remedied by statute, yet it is necessary to recognize frankly the limits within which statute law can effect economic conditions, and to admit that there is a very large area of business within which legislation is not only inefficient but productive of positive evil, however well intended. A review of the history of legislation on economic questions seems to show two classes of such statutes, the one effective and the other the reverse. Examples of the first are "factory acts," compulsory education, forms of business, regula-

tion of corporate organization and management, safety appliances, prevention of fraud, etc., all of which have worked well. Examples of the other class are usury laws, absolute regulation of prices, anti-trust laws as heretofore explained, and antispeculation laws, all of which have been essentially unenforceable (with some marked exceptions) and have, in the case of the usury laws and regulation of prices, actually accomplished results the reverse of those intended.

In dealing with the remedial force of statutes, it must be remembered that the law is merely, in the final analysis, a crystallization of public opinion, and a statute which too far precedes or diverges from public opinion will be ineffective. The use of the two forces must therefore proceed together.

Furthermore, it is necessary to consider the varying degrees of efficiency of given laws as dependent upon their form. Certain statutes are easily enforced—are practically self-enforcing—and owe their efficiency merely to their form, while others directed to the same end are unenforceable. The most important reason for this difference probably lies in the "sanction" of the given act—i. e., whether the impelling force thereof is a criminal penalty or a private right of the individual. It may be stated conclusively, as a general rule, that that statute which relies for its enforcement upon the interest of private individuals will be much more effective than that which is based purely upon a criminal penalty. This distinction has a very important bearing upon the form of corporation law.

CONSTITUTIONAL POWERS OF CONGRESS OVER CORPORATE BUSINESS.

The Federal powers which are available to meet the conditions above outlined and to carry out the purposes above indicated are based almost wholly on the "Commerce clause" of the Constitution, as follows:

Article 1, section 8. "To regulate commerce with foreign nations, and among the several States, and with the Indian tribes."

Subordinate powers which may be sometimes available for the same purposes are the power to establish post-offices and post-roads, to lay and collect taxes, etc., and to coin money and regulate the value thereof.

It may be considered as established that under these powers Congress may—

(1) Create corporations as a means of regulating interstate commerce.

(2) Give to such corporations the power to engage in interstate or foreign commerce.

(3) Prohibit any other corporations or individuals from engaging in the same.

(4) As a condition precedent to the grant of such corporate powers, lay any restrictions it chooses upon the organization, conduct, or management of such corporation.

(5) Tax interstate commerce at will and the instrumentalities and corporations engaged therein.

(6) Provide regulations for the carrying on of interstate commerce generally and in such local affairs as are now left to the States in the "silence of Congress" under the principle established in Cooley *v.* Port Wardens (12 How., 299), and in the carrying out of such powers it may use any or all means "which are appropriate, which are plainly

adapted to that end, which are not prohibited but consistent with the letter and spirit of the Constitution."

Furthermore, the individual States are restrained by the Federal Constitution from laying any burdens upon interstate or foreign commerce or from regulating or controlling the same, except in the case of local matters and in the "silence of Congress" aforesaid. This does not exclude the rights of the States to exercise their ordinary police power as applied to the persons engaged in, or the instrumentalities used for, interstate commerce so long as the exercise of such powers does not constitute a direct interference with that commerce itself, but is applied only indirectly, and is appropriate for the general purposes of local police regulation.

As a corollary from the above, the States can lay no tax upon interstate commerce as such, or upon the subject-matter thereof as such, nor can any State discriminate against interstate commerce as such, nor can it lay any burdens upon the exercise of a constitutional Federal franchise or impose taxes thereon, except by direct permission of Congress.

Briefly, as to interstate and foreign commerce, the United States is one country, one legislative area, and when Federal regulation of such commerce enters any given State for the purpose of operating on such commerce it enters it not as foreign territory, but as a part of its own jurisdiction.

REMEDIAL LEGISLATION SUGGESTED BY THE ABOVE-DESCRIBED WORK OF THE BUREAU.

1. ADDITIONAL STATE ACTION.

This is wholly inadequate. The same objections apply to this suggestion on general principles as have already been made to the present condition of State corporation laws. There is now a strong positive motive leading the State legislatures toward lax and improper corporation laws, and even if all the States were actuated by most correct motives, nevertheless, it is obviously impossible that forty-five different jurisdictions should agree on anything like a uniform system in so important a matter as corporation law.

2. DELEGATION BY THE UNITED STATES TO THE INDIVIDUAL STATES OF THE CONTROL OF INTERSTATE COMMERCE.

Two objections, each conclusive in itself, can be made to this suggestion:

(a) Such action is believed to be unconstitutional. Congress has no power to divest itself of its constitutional powers or to delegate the same to any other legislative body.

(b) Even supposing that this could be legally done, the results would be open to the same objections as have been referred to just above.

3. FEDERAL INCORPORATION.

This is one of the two more practical methods suggested. It assumes the passage by Congress of a complete corporation law with the compulsory requirement that all corporations engaged in interstate com-

merce shall be organized under such law. It contemplates that such corporation law shall be so drawn as to embody all the necessary and proper features to provide an efficient form for the carrying on of corporate business, and at the same time to safeguard properly all the interests involved therein. Such a law should have three principal features.

(a) The creation by Congress of corporations with power to engage in interstate commerce.

(b) The prohibition upon all other corporations from engaging in such commerce.

(c) The granting to such Federal corporations of the right to *manufacture* and *produce* within the several States.

The first two powers are subject to no vital legal objections, nor can a State make any essential opposition to them even by the right of taxation. The chief difficulty in the Federal corporation law, as above indicated, arises in connection with the third of the foregoing essential features, to-wit, the question: Can Congress give to an "interstate commerce corporation" the additional power to *produce* or *manufacture* in any State so that that grant of power shall be valid as against the States or individuals? In the absence of direct judicial decision on this point, it is impossible now to determine this question conclusively, and the answer to it must be made by reasoning from inference and on general principles.

Furthermore, there would be the practical difficulty of giving to the States power of taxation over such corporations in such manner as to permit the States to obtain the amount of revenue which they now collect from corporations domestic and foreign. The suggestion that the Federal incorporation law be made optional fails to meet the difficulties, for the reason that it would not be taken advantage of unless its conditions were more satisfactory to the corporations, and especially their promoters, than offered by existing State laws; and if such were the conditions, there would be no benefit to the public and no remedy of existing evils.

A more complete discussion of the power of Congress to grant to Federal corporations the right to *manufacture* and *produce* within the several States is contained in Appendix A, hereinafter.

4. FEDERAL FRANCHISE OR LICENSE SYSTEM FOR INTERSTATE COMMERCE.

The principal features of such a system would be:

(a) The granting of a Federal franchise or license to engage in interstate commerce.

(b) The imposition of all necessary requirements as to corporate organization and management as a condition precedent to the grant of such franchise or license.

(c) The requirement of such reports and returns as may be desired, as a condition of the retention of such franchise or license.

(d) The prohibition of all corporations and corporate agencies from engaging in interstate and foreign commerce without such Federal franchise or license.

(e) The full protection of the grantees of such franchise or license who obey the laws applicable thereto.

(f) The right to refuse or withdraw such franchise or license in case

of violation of law, with appropriate right of judicial appeal to prevent the abuse of power by the administrative officer.

No fundamental legal difficulty can be discovered in this plan. Congress would grant to corporations that meet the proper conditions power to engage in interstate commerce; would fix the conditions under which their business should be done in such manner as to remedy the present defects in the State corporation law, and would require all corporations and corporate agencies engaged in interstate commerce to make returns to a Federal bureau, showing the amount and nature of the business done, and such other facts as may be desired. Furthermore, this plan obviates the difficulty regarding State taxation.

Inasmuch as practically all the important corporations of the present time are engaged in interstate commerce, and as the United States has the right to fix conditions to this license to engage in interstate commerce, this system would enable the Federal Government to reform the present condition of corporate business in all its important features.

A discussion of the details of the franchise or license system is contained in Appendix B, and a comparison of this system with that of compulsory Federal incorporation is contained in Appendix C, hereinafter.

SUMMARY.

As shown by this report, the work of the Bureau has thus been almost entirely the laying of a foundation of accurate knowledge of the legal and general business conditions with which it must deal and a clear definition of the problems for the consideration of which it was created.

The result of the work may be thus summarized:

1. Commercial and industrial conditions present the foremost problems of to-day. There exists a deep-rooted general feeling of dissatisfaction with existing conditions. Some causes of dissatisfaction are apparent, and the evils very real and great.

2. The present legal conditions under which corporate business is carried on are extremely unsatisfactory. They admit of, and invite, extreme abuse. They are the result of forced growth under divergent pressures, and in their present anomalous state represent the needs or demands of special interests, and are not a permanent body of law adapted to provide properly for all the interests involved.

Furthermore, the "State system," applied to interstate businesses, has developed additional and peculiar evils; a diversity so great as to amount in operation to anarchy; an inevitable tendency toward the lowest level of lax regulation, and the unequal and disastrous contest between State legislatures and commercial forces of national size and power.

3. No satisfactory reform is to be expected under the "State system" of incorporation.

4. The Federal Government has at its command sufficient power to remedy these conditions in its control of interstate commerce, supplemented by subsidiary and incidental powers.

5. So far the commerce clause of the Constitution has had a negative development only, both under Congress and by judicial interpretation. With the exception of the interstate-commerce act—the force of which has been seriously weakened by judicial interpretation—and

the navigation laws, there has been no really affirmative attempt to regulate interstate commerce. The commerce clause has been chiefly used to prevent the interference by States with interstate commerce.

6. The creation of this Bureau affords a means for getting essential facts. In addition to the value to Congress of such information, the publication of facts, the dissemination of knowledge, will bring into existence the influence of an enlightened public opinion which properly applied would go far to develop the sense of public trust involved in the control of private wealth and the sense of personal responsibility on the part of officers or managers of corporations.

7. The work of the Bureau can proceed along the lines of inquiry and report, adding fact upon fact in proof of existing conditions, but no real remedy can be expected until Congress takes action by affirmative use of the great powers granted under the commerce clause of the Constitution.

8. The possible Congressional actions are:

(a) Delegation to the States of control over interstate commerce. This is believed to be unconstitutional, and secondly subject to all the objections applicable to the present "State system."

(b) Compulsory Federal incorporation of interstate commerce companies. This is probably legally practicable, but it involves radical industrial and political changes by the centralization of power in the Federal Government, and presents serious difficulties because of its effect upon the authority of the States over such corporations in matters of taxation and local regulation. Any optional law of this character would not overcome these difficulties.

(c) Federal license or franchise for interstate commerce. Legally this is practicable; it avoids the legal difficulties of national incorporation as well as the practical one of centralization of power, and gives the National Government direct regulation of the agencies of interstate and foreign commerce.

I therefore beg to suggest that Congress be requested to consider the advisability of enacting a law for the legislative regulation of interstate and foreign commerce under a license or franchise, which in general should provide as follows:

(a) The granting of a Federal franchise or license to engage in interstate commerce.

(b) The imposition of all necessary requirements as to corporate organization and management as a condition precedent to the grant of such franchise or license.

(c) The requirement of such reports and returns as may be desired as a condition of the retention of such franchise or license.

(d) The prohibition of all corporations and corporate agencies from engaging in interstate and foreign commerce without such Federal franchise or license.

(e) The full protection of the grantees of such franchise or license who obey the laws applicable thereto.

(f) The right to refuse or withdraw such franchise or license in case of violation of law, with appropriate right of judicial appeal to prevent abuse of power by the administrative officer.

This Bureau, under the direction of the Secretary of Commerce and Labor, affords the appropriate machinery for the administration of such a law.

It is fully appreciated that this recommendation is not new, but has been the subject of most serious and exhaustive consideration by public officials and commissions, as well as private persons technically well qualified to speak. The Industrial Commission, in its final report on this subject, recommended, among other things, the adoption of a plan quite similar to this. It is neither necessary nor wise to attempt, in this report, to elaborate the details of such an act; but the Bureau has upon its files abundant and, in many particulars, exhaustive information which would be immediately available for the use of Congress or any committee thereof which might have under consideration such a measure.

JAMES RUDOLPH GARFIELD,
Commissioner of Corporations.

The SECRETARY OF COMMERCE AND LABOR.

REPORT

OF THE

ISTHMIAN CANAL COMMISSION

FOR A

PORTION OF THE CURRENT YEAR TO NOVEMBER 30, 1904.

COMMISSIONERS:

Rear-Admiral JOHN G. WALKER, U. S. Navy, *Chairman*.

Maj. Gen. GEORGE W. DAVIS, U. S. Army.
WILLIAM BARCLAY PARSONS, C. E.
WILLIAM H. BURR, C. E.
BENJAMIN M. HARROD, C. E.
C. EWALD GRUNSKY, C. E.
FRANK J. HECKER (Resigned November 16, 1905.

OFFICE OF THE ISTHMIAN CANAL COMMISSION,
Washington, D. C., December 1, 1904.

SIR: The Isthmian Canal Commission having been actively engaged in the discharge of its duties since its first meeting on March 22, 1904, has the honor to submit this its first annual report.

ACT AUTHORIZING THE CONSTRUCTION OF AN ISTHMIAN CANAL.

The Isthmian Canal Commission is organized and is acting under the provisions of the act of Congress approved June 28, 1902, as follows:

AN ACT to provide for the construction of a canal connecting the waters of the Atlantic and Pacific oceans.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States is hereby authorized to acquire, for and on behalf of the United States, at a cost not exceeding forty millions of dollars, the rights, privileges, franchises, concessions, grants of land, right of way, unfinished work, plants, and other property, real, personal and mixed, of every name and nature, owned by the New Panama Canal Company, of France, on the Isthmus of Panama, and all its maps, plans, drawings, records on the Isthmus of Panama and in Paris, including all the capital stock, not less, however, than sixty-eight thousand eight hundred and sixty-three shares of the Panama Railroad Company, owned by or held for the use of said canal company, provided a satisfactory title to all of said property can be obtained.

SEC. 2. That the President is hereby authorized to acquire from the Republic of Colombia, for and on behalf of the United States, upon such terms as he may deem reasonable, perpetual control of a strip of land, the territory of the Republic of Colombia, not less than six miles in width, extending from the Caribbean Sea to the Pacific Ocean, and the right to use and dispose of the waters thereon, and to excavate, construct, and to perpetually maintain, operate, and protect thereon a canal of such depth and capacity as will afford convenient passage of ships of the greatest tonnage and draft now in use, from the Caribbean Sea to the Pacific Ocean, which control shall include the right to perpetually maintain and operate the Panama Railroad, if the ownership thereof, or a controlling interest therein, shall have been acquired by the United States, and also jurisdiction over said strip, and the ports at the ends thereof to make such police and sanitary rules and regulations as shall be necessary to preserve order and preserve the public health thereon, and to establish

such judicial tribunals as may be agreed upon theron as may be necessary to enforce such rules and regulations.

The President may acquire such additional territory and rights from Colombia as in his judgment will facilitate the general purpose hereof.

SEC. 3. That when the President shall have arranged to secure a satisfactory title to the property of the New Panama Canal Company, as provided in section one hereof, and shall have obtained by treaty control of the necessary territory from the Republic of Colombia, as provided in section two hereof, he is authorized to pay for the property of the New Panama Canal Company forty millions of dollars, and to the Republic of Colombia such sum as shall have been agreed upon, and a sum sufficient for both said purposes is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to be paid on warrant or warrants drawn by the President.

The President shall then, through the Isthmian Canal Commission hereinafter authorized, cause to be excavated, constructed, and completed, utilizing to that end, as far as practicable, the work heretofore done by the New Panama Canal Company, of France, and its predecessor company, a ship canal from the Caribbean Sea to the Pacific Ocean. Such canal shall be of sufficient capacity and depth as shall afford convenient passage for vessels of the largest tonnage and greatest draft now in use, and such as may be reasonably anticipated, and shall be supplied with all necessary locks and other appliances to meet the necessities of vessels passing through the same from ocean to ocean; and he shall also cause to be constructed such safe and commodious harbors at the termini of said canal, and make such provisions for defense as may be necessary for the safety and protection of said canal and harbors. That the President is authorized for the purposes aforesaid to employ such persons as he may deem necessary, and to fix their compensation.

SEC. 4. That should the President be unable to obtain for the United States a satisfactory title to the property of the New Panama Canal Company and the control of the necessary territory of the Republic of Colombia and the rights mentioned in sections one and two of this Act, within a reasonable time and upon reasonable terms, then the President, having first obtained for the United States perpetual control by treaty of the necessary territory from Costa Rica and Nicaragua, upon terms which he may consider reasonable, for the construction, perpetual maintenance, operation, and protection of a canal connecting the Caribbean Sea with the Pacific Ocean by what is commonly known as the Nicaragua route, shall, through the said Isthmian Canal Commission, cause to be excavated and constructed a ship canal and waterway from a point on the shore of the Caribbean Sea near Greytown, by way of Lake Nicaragua, to a point near Brito on the Pacific Ocean. Said canal shall be of sufficient capacity and depth to afford convenient passage for vessels of the largest tonnage and greatest draft now in use, and such as may be reasonably anticipated, and shall be supplied with all necessary locks and other appliances to meet the necessities of vessels passing through the same from ocean to ocean; and he shall also construct such safe and commodious harbors at the termini of said canal as shall be necessary for the safe and convenient use thereof, and shall make such provisions for defense as may be necessary for the safety and protection of said harbors and canal; and such sum or sums of money as may be agreed upon by such treaty as compensation to be paid to Nicaragua and Costa Rica for the concessions and rights hereunder provided to be acquired by the United States are hereby appropriated, out of any money in the Treasury not otherwise appropriated, to be paid on warrant or warrants drawn by the President.

The President shall cause the said Isthmian Canal Commission to make such surveys as may be necessary for said canal and harbors to be made, and in making such surveys and in the construction of said canal may employ such persons as he may deem necessary, and may fix their compensation.

In the excavation and construction of said canal the San Juan River and Lake Nicaragua, or such parts of each as may be made available, shall be used.

SEC. 5. That the sum of ten million dollars is hereby appropriated, out of any money in the Treasury not otherwise appropriated, toward the project herein contemplated by either route so selected.

And the President is hereby authorized to cause to be entered into such contract or contracts as may be deemed necessary for the proper excavation, construction, completion, and defense of said canal, harbors, and defenses, by the route finally determined upon under the provisions of this Act. Appropriations therefor shall from time to time be hereafter made, not to exceed in the aggregate the additional sum of one hundred and thirty-five millions of dollars, should the Panama route be adopted, or one hundred and eighty millions of dollars should the Nicaragua route be adopted.

SEC. 6. That in any agreement with the Republic of Colombia, or with the States of Nicaragua and Costa Rica, the President is authorized to guarantee to said Republic

or to said States the use of said canal and harbors, upon such terms as may be agreed upon, for all vessels owned by said States or by citizens thereof.

SEC. 7. That to enable the President to construct the canal and works appurtenant thereto, as provided in this Act, there is hereby created the Isthmian Canal Commission, the same to be composed of seven members, who shall be nominated and appointed by the President, by and with the advice and consent of the Senate, and who shall serve until the completion of said canal unless sooner removed by the President, and one of whom shall be named as the chairman of said Commission. Of the seven members of said Commission at least four of them shall be persons learned and skilled in the science of engineering, and of the four at least one shall be an officer of the United States Army, and at least one other shall be an officer of the United States Navy, the said officers respectively being either upon the active or retired list of the Army or of the Navy. Said Commissioners shall each receive such compensation as the President shall prescribe until the same shall have been otherwise fixed by the Congress. In addition to the members of said Isthmian Canal Commission the President is hereby authorized, through said Commission, to employ in said service any of the engineers of the United States Army at his discretion, and likewise to employ any engineers in civil life, at his discretion, and any other persons necessary for the proper and expeditious prosecution of said work. The compensation of all such engineers and other persons employed under this act shall be fixed by said Commission, subject to the approval of the President. The official salary of any officer appointed or employed under this act shall be deducted from the amount of salary or compensation provided by or which shall be fixed under the terms of this act. Said Commission shall in all matters be subject to the direction and control of the President, and shall make to the President annually and at such other periods as may be required, either by law or by the order of the President, full and complete reports of all their actings and doings and of all moneys received and expended in the construction of said work and in the performance of their duties in connection therewith, which said reports shall be by the President transmitted to Congress. And the said Commission shall furthermore give to Congress, or either House of Congress, such information as may at any time be required either by act of Congress or by the order of either House of Congress. The President shall cause to be provided and assigned for the use of the Commission such offices as may, with the suitable equipment of same, be necessary and proper, in his discretion, for the proper discharge of the duties thereof.

SEC. 8. That the Secretary of the Treasury is hereby authorized to borrow on the credit of the United States from time to time, as the proceeds may be required to defray expenditures authorized by this act (such proceeds when received to be used only for the purpose of meeting such expenditures), the sum of one hundred and thirty million dollars, or so much thereof as may be necessary, and to prepare and issue therefor coupon or registered bonds of the United States in such form as he may prescribe, and in denominations of twenty dollars or some multiple of that sum, redeemable in gold coin at the pleasure of the United States after ten years from the date of their issue, and payable thirty years from such date, and bearing interest payable quarterly in gold coin at the rate of two per centum per annum; and the bonds herein authorized shall be exempt from all taxes or duties of the United States, as well as from taxation in any form by or under State, municipal, or local authority: *Provided*, That said bonds may be disposed of by the Secretary of the Treasury at not less than par, under such regulations as he may prescribe, giving to all citizens of the United States an equal opportunity to subscribe therefor, but no commissions shall be allowed or paid thereon; and a sum not exceeding one-tenth of one per centum of the amount of the bonds herein authorized is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to pay the expense of preparing, advertising, and issuing the same.

Approved, June 28, 1902.

TREATY WITH THE REPUBLIC OF PANAMA.

The treaty between the United States and the Republic of Panama, under which the construction of the Panama Canal has been made possible, was signed at Washington on November 18, 1903, was ratified by the Republic of Panama on December 2, 1903, and by the United States States Senate on February 23, 1904, and is as follows:

The United States of America and the Republic of Panama being desirous to insure the construction of a ship canal across the Isthmus of Panama to connect the Atlantic and Pacific oceans, and the Congress of the United States of America having

passed an act approved June 28, 1902, in furtherance of that object, by which the President of the United States is authorized to acquire within a reasonable time the control of the necessary territory of the Republic of Colombia, and the sovereignty of such territory being actually vested in the Republic of Panama, the high contracting parties have resolved for that purpose to conclude a convention and have accordingly appointed as their plenipotentiaries,—

The President of the United States of America, John Hay, Secretary of State, and

The Government of the Republic of Panama, Philippe Bunau-Varilla, envoy extraordinary and minister plenipotentiary of the Republic of Panama, thereunto specially empowered by said Government, who after communicating with each other their respective full powers, found to be in good and due form, have agreed upon and concluded the following articles·

ARTICLE I.

The United States guarantees and will maintain the independence of the Republic of Panama.

ARTICLE II.

The Republic of Panama grants to the United States in perpetuity the use, occupation and control of a zone of land and land under water for the construction, maintenance, operation, sanitation and protection of said canal of the width of ten miles extending to the distance of five miles on each side of the center line of the route of the canal to be constructed; the said Zone beginning in the Caribbean Sea three marine miles from mean low-water mark and extending to and across the Isthmus of Panama into the Pacific Ocean to a distance of three marine miles from mean low-water mark with the proviso that the cities of Panama and Colon and the harbors adjacent to said cities, which are included within the boundaries of the Zone above described, shall not be included within this grant. The Republic of Panama further grants to the United States in perpetuity the use, occupation and control of any other lands and waters outside of the Zone above described which may be necessary and convenient for the construction, maintenance, operation, sanitation and protection of the said canal or of any auxiliary canals or other works necessary and convenient for the construction, maintenance, operation, sanitation and protection of the said enterprise.

The Republic of Panama further grants in like manner to the United States in perpetuity all islands within the limits of the Zone above described and in addition thereto the group of small islands in the Bay of Panama, named Perico, Naos, Culebra and Flamenco.

ARTICLE III.

The Republic of Panama grants to the United States all the rights, power and authority within the Zone mentioned and described in Article II of this agreement and within the limits of all auxiliary lands and waters mentioned and described in said Article II which the United States would possess and exercise if it were the sovereign of the territory within which said lands and waters are located to the entire exclusion of the exercise by the Republic of Panama of any such sovereign rights, power or authority.

ARTICLE IV.

As rights subsidiary to the above grants the Republic of Panama grants in perpetuity to the United States the right to use the rivers, streams lakes and other bodies of water within its limits for navigation, the supply of water or water power or other purposes, so far as the use of said rivers, streams, lakes and bodies of water and the waters thereof may be necessary and convenient for the construction, maintenance, operation, sanitation and protection of the said canal.

ARTICLE V.

The Republic of Panama grants to the United States in perpetuity a monopoly for the construction, maintenance and operation of any system of communication by means of canal or railroad across its territory between the Caribbean Sea and the Pacific Ocean.

ARTICLE VI.

The grants herein contained shall in no manner invalidate the titles or rights of private landholders or owners of private property in the said Zone or in or to any of the lands or waters granted to the United States by the provisions of any article

of this treaty, nor shall they interfere with the rights of way over the public roads passing through the said Zone or over any of the said lands or waters unless said rights of way or private rights shall conflict with rights herein granted to the United States in which case the rights of the United States shall be superior. All damages caused to the owners of private lands or private property of any kind by reason of the grants contained in this treaty or by reason of the operations of the United States, its agents or employees, or by reason of the construction, maintenance, operation, sanitation and protection of the said canal or of the works of sanitation and protection herein provided for, shall be appraised and settled by a joint commission appointed by the Governments of the United States and the Republic of Panama, whose decisions as to such damages shall be final and whose awards as to such damages shall be paid solely by the United States. No part of the work on said canal or the Panama Railroad or on any auxiliary works relating thereto and authorized by the terms of this treaty shall be prevented, delayed or impeded by or pending such proceedings to ascertain such damages. The appraisal of said private lands and private property and the assessment of damages to them shall be based upon their value before the date of this convention.

ARTICLE VII.

The Republic of Panama grants to the United States within the limits of the cities of Panama and Colon and their adjacent harbors and within the territory adjacent thereto the right to acquire by purchase or by the exercise of the right of eminent domain, any lands, buildings, water rights or other properties necessary and convenient for the construction, maintenance, operation and protection of the canal and of any works of sanitation, such as the collection and disposition of sewage and the distribution of water in the said cities of Panama and Colon, which, in the discretion of the United States may be necessary and convenient for the construction, maintenance, operation, sanitation and protection of the said canal and railroad. All such works of sanitation, collection and disposition of sewage and distribution of water in the cities of Panama and Colon shall be made at the expense of the United States, and the Government of the United States, its agents or nominees shall be authorized to impose and collect water rates and sewerage rates which shall be sufficient to provide for the payment of interest and the amortization of the principal of the cost of said works within a period of fifty years and upon the expiration of said term of fifty years the system of sewers and water works shall revert to and become the properties of the cities of Panama and Colon respectively, and the use of the water shall be free to the inhabitants of Panama and Colon, except to the extent that water rates may be necessary for the operation and maintenance of said system of sewers and water.

The Republic of Panama agrees that the cities of Panama and Colon shall comply in perpetuity with the sanitary ordinances whether of a preventive or curative character, prescribed by the United States and in case the Government of Panama is unable or fails in its duty to enforce this compliance by the cities of Panama and Colon with the sanitary ordinances of the United States the Republic of Panama grants to the United States the right and authority to enforce the same.

The same right and authority are granted to the United States for the maintenance of public order in the cities of Panama and Colon and the territories and harbors adjacent thereto in case the Republic of Panama should not be, in the judgment of the United States, able to maintain such order.

ARTICLE VIII.

The Republic of Panama grants to the United States all rights which it now has or hereafter may acquire to the property of the New Panama Canal Company and the Panama Railroad Company as a result of the transfer of sovereignty from the Republic of Colombia to the Republic of Panama over the Isthmus of Panama and authorizes the New Panama Canal Company to sell and transfer to the United States its rights, privileges, properties and concessions as well as the Panama Railroad and all the shares or part of the shares of that company; but the public lands situated outside of the Zone described in Article II of this treaty now included in the concessions to both said enterprises and not required in the construction or operation of the canal shall revert to the Republic of Panama except any property now owned by or in the possession of said companies within Panama or Colon or the ports or terminals thereof.

ARTICLE IX.

The United States agrees that the ports at either entrance of the canal and the waters thereof, and the Republic of Panama agrees that the towns of Panama and

Colon shall be free for all time so that there shall not be imposed or collected custom-house tolls, tonnage, anchorage, light-house, wharf, pilot, or quarantine dues or any other charges or taxes of any kind upon any vessel using or passing through the canal or belonging to or employed by the United States, directly or indirectly, in connection with the construction, maintenance, operation, sanitation and protection of the main canal, or auxiliary works, or upon the cargo, officers, crew, or passengers of any such vessels, except such tolls and charges as may be imposed by the United States for the use of the canal and other works, and except tolls and charges imposed by the Republic of Panama upon merchandise destined to be introduced for the consumption of the rest of the Republic of Panama, and upon vessels touching at the ports of Colon and Panama and which do not cross the canal.

The Government of the Republic of Panama shall have the right to establish in such ports and in the towns of Panama and Colon such houses and guards as it may deem necessary to collect duties on importations destined to other portions of Panama and to prevent contraband trade. The United States shall have the right to make use of the towns and harbors of Panama and Colon as places of anchorage, and for making repairs, for loading, unloading, depositing, or transshipping cargoes either in transit or destined for the service of the canal and for other works pertaining to the canal.

ARTICLE X.

The Republic of Panama agrees that there shall not be imposed any taxes, national, municipal, departmental, or of any other class, upon the canal, the railways and auxiliary works, tugs and other vessels employed in the service of the canal, store-houses, workshops, offices, quarters for laborers, factories of all kinds, warehouses, wharves, machinery and other works, property, and effects appertaining to the canal or railroad and auxiliary works, or their officers or employees, situated within the cities of Panama and Colon, and that there shall not be imposed contributions or charges of a personal character of any kind upon officers, employees, laborers, and other individuals in the service of the canal and railroad and auxiliary works.

ARTICLE XI.

The United States agrees that the official dispatches of the Government of the Republic of Panama shall be transmitted over any telegraph and telephone lines established for canal purposes and used for public and private business at rates not higher than those required from officials in the service of the United States.

ARTICLE XII.

The Government of the Republic of Panama shall permit the immigration and free access to the lands and workshops of the canal and its auxiliary works of all employees and workmen of whatever nationality under contract to work upon or seeking employment upon or in any wise connected with the said canal and its auxiliary works, with their respective families, and all such persons shall be free and exempt from the military service of the Republic of Panama.

ARTICLE XIII.

The United States may import at any time into the said Zone and auxiliary lands, free of custom duties, imposts, taxes, or other charges, and without any restrictions, any and all vessels, dredges, engines, cars, machinery, tools, explosives, materials, supplies, and other articles necessary and convenient in the construction, maintenance, operation, sanitation and protection of the canal and auxiliary works, and all provisions, medicines, clothing, supplies, and other things necessary and convenient for the officers, employees, workmen and laborers in the service and employ of the United States and for their families. If any such articles are disposed of for use outside of the Zone and auxiliary lands granted to the United States and within the territory of the Republic, they shall be subject to the same import or other duties as like articles imported under the laws of the Republic of Panama.

ARTICLE XIV.

As the price of compensation for the rights, powers and privileges granted in this convention by the Republic of Panama to the United States, the Government of the United States agrees to pay to the Republic of Panama the sum of ten million dollars ($10,000,000) in gold coin of the United States on the exchange of the ratifica-

tion of this convention and also an annual payment during the life of this convention of two hundred and fifty thousand dollars ($250,000) in like gold coin, beginning nine years after the date aforesaid.

The provisions of this article shall be in addition to all other benefits assured to the Republic of Panama under this convention.

But no delay or difference of opinion under this article or any other provisions of this treaty shall affect or interrupt the full operation and effect of this convention in all other respects.

ARTICLE XV.

The joint commission referred to in Article VI shall be established as follows:

The President of the United States shall nominate two persons and the President of the Republic of Panama shall nominate two persons and they shall proceed to a decision; but in case of disagreement of the commission (by reason of their being equally divided in conclusion) an umpire shall be appointed by the two Governments who shall render the decision. In the event of the death, absence, or incapacity of a commissioner or umpire, or of his omitting, declining or ceasing to act, his place shall be filled by the appointment of another person in the manner above indicated. All decisions by a majority of the commission or by the umpire shall be final.

ARTICLE XVI.

The two Governments shall make adequate provision by future agreement for the pursuit, capture, imprisonment, detention and delivery within said Zone and auxiliary lands to the authorities of the Republic of Panama of persons charged with the commitment of crimes, felonies or misdemeanors without said Zone and for the pursuit, capture, imprisonment, detention and delivery without said Zone to the authorities of the United States of persons charged with the commitment of crimes, felonies and misdemeanors within said Zone and auxiliary lands.

ARTICLE XVII.

The Republic of Panama grants to the United States the use of all the ports of the Republic open to commerce as places of refuge for any vessels employed in the canal enterprise, and for all vessels passing or bound to pass through the canal which may be in distress and be driven to seek refuge in said ports. Such vessels shall be exempt from anchorage and tonnage dues on the part of the Republic of Panama.

ARTICLE XVIII.

The canal, when constructed, and the entrances thereto shall be neutral in perpetuity, and shall be opened upon the terms provided for by section 1 of article three of, and in conformity with all the stipulations of, the treaty entered into by the Governments of the United States and Great Britain on November 18, 1901.

ARTICLE XIX.

The Government of the Republic of Panama shall have the right to transport over the canal its vessels and its troops and munitions of war in such vessels at all times without paying charges of any kind. The exemption is to be extended to the auxiliary railway for the transportation of persons in the service of the Republic of Panama, or of the police force charged with the preservation of public order outside of said Zone, as well as to their baggage, munitions of war and supplies.

ARTICLE XX.

If by virtue of any existing treaty in relation to the territory of the Isthmus of Panama, whereof the obligations shall descend or be assumed by the Republic of Panama, there may be any privilege or concession in favor of the Government or the citizens or subjects of a third power relative to an interoceanic means of communication which in any of its terms may be incompatible with the terms of the present convention, the Republic of Panama agrees to cancel or modify such treaty in due form, for which purpose it shall give to the said third power the requisite notification within the term of four months from the date of the present convention, and in case the existing treaty contains no clause permitting its modifications or annulment, the Republic of Panama agrees to procure its modification or annulment in such form that there shall not exist any conflict with the stipulations of the present convention.

ARTICLE XXI.

The rights and privileges granted by the Republic of Panama to the United States in the preceding articles are understood to be free of all anterior debts, liens, trusts, or liabilities, or concessions or privileges to other governments, corporations, syndicates or individuals, and, consequently, if there should arise any claims on account of the present concessions and privileges or otherwise, the claimants shall resort to the Government of the Republic of Panama and not to the United States for any indemnity or compromise which may be required.

ARTICLE XXII.

The Republic of Panama renounces and grants to the United States the participation to which it might be entitled in the future earnings of the canal under Article XV of the concessionary contract with Lucien N. B. Wyse, now owned by the New Panama Canal Company and any and all other rights or claims of a pecuniary nature arising under or relating to said concession, or arising under or relating to the concessions to the Panama Railroad Company or any extension or modification thereof; and it likewise renounces, confirms and grants to the United States, now and hereafter, all the rights and property reserved in the said concessions which otherwise would belong to Panama at or before the expiration of the terms of ninety-nine years of the concessions granted to or held by the above-mentioned party and companies, and all right, title and interest which it now has or may hereafter have, in and to the lands, canal, works, property and rights held by the said companies under said concessions or otherwise, and acquired or to be acquired by the United States from or through the New Panama Canal Company, including any property and rights which might or may in the future either by lapse of time, forfeiture or otherwise, revert to the Republic of Panama under any contracts or concessions, with said Wyse, the Universal Panama Canal Company, the Panama Railroad Company and the New Panama Canal Company.

The aforesaid rights and property shall be and are free and released from any present or reversionary interest in or claims of Panama and the title of the United States thereto upon consummation of the contemplated purchase by the United States from the New Panama Canal Company, shall be absolute, so far as concerns the Republic of Panama, excepting always the rights of the Republic specifically secured under this treaty.

ARTICLE XXIII.

If it should become necessary at any time to employ armed forces for the safety or protection of the canal, or of the ships that make use of the same, or the railways and auxiliary works, the United States shall have the right, at all times and in its discretion, to use its police and its land and naval forces or to establish fortifications for these purposes.

ARTICLE XXIV.

No change either in the government or in the laws and treaties of the Republic of Panama shall, without the consent of the United States, affect any right of the United States under the present convention, or under any treaty stipulation between the two countries that now exists or may hereafter exist touching the subject-matter of this convention.

If the Republic of Panama shall hereafter enter as a constituent into any other Government or into any union or confederation of states, so as to merge her sovereignty or independence in such government, union or confederation, the rights of the United States under this convention shall not be in any respect lessened or impaired.

ARTICLE XXV.

For the better performance of the engagements of this convention and to the end of the efficient protection of the canal and the preservation of its neutrality, the Government of the Republic of Panama will sell or lease to the United States lands adequate and necessary for naval or coaling stations on the Pacific coast and on the western Caribbean coast of the Republic at certain points to be agreed upon with the President of the United States.

ARTICLE XXVI.

This convention, when signed by the plenipotentiaries of the contracting parties shall be ratified by the respective Governments and the ratifications shall be exchanged at Washington at the earliest date possible.

THE LAW ESTABLISHING A GOVERNMENT FOR THE CANAL ZONE.

Provision for the government of the Canal Zone on the Isthmus of Panama was made by the act of Congress approved April 28, 1904, which act is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized, upon the acquisition of the property of the New Panama Canal Company and the payment to the Republic of Panama of the ten millions of dollars provided by article fourteen of the treaty between the United States and the Republic of Panama, the ratifications of which were exchanged on the twenty-sixth day of February, nineteen hundred and four, to be paid to the latter Government, to take possession of and occupy on behalf of the United States the zone of land and land under water of the width of ten miles, extending to the distance of five miles on each side of the center line of the route of the canal to be constructed thereon, which said zone begins in the Caribbean Sea three marine miles from mean low-water mark and extends to and across the Isthmus of Panama into the Pacific Ocean to the distance of three marine miles from mean low-water mark, and also of all islands within said zone, and in addition thereto the group of islands in the Bay of Panama named Perico, Naos, Culebra, and Flamenco, and, from time to time, of any lands and waters outside of said zone which may be necessary and convenient for the construction, maintenance, operation, sanitation, and protection of the said canal, or of any auxiliary canals or other works necessary and convenient for the construction, maintenance, operation, sanitation, and protection of said enterprise, the use, occupation, and control whereof were granted to the United States by article two of said treaty. The said zone is hereinafter referred to as "the Canal Zone." The payment of the ten millions of dollars provided by article fourteen of said treaty shall be made in lieu of the indefinite appropriation made in the third section of the act of June twenty-eighth, nineteen hundred and two, and is hereby appropriated for said purpose.

SEC. 2. That until the expiration of the Fifty-eighth Congress, unless provision for the temporary government of the Canal Zone be sooner made by Congress, all the military, civil, and judicial powers as well as the power to make all rules and regulations necessary for the government of the Canal Zone and all the rights, powers, and authority granted by the terms of said treaty to the United States shall be vested in such person or persons and shall be exercised in such manner as the President shall direct for the government of said zone and maintaining and protecting the inhabitants thereof in the free enjoyment of their liberty, property, and religion.

INSTRUCTIONS FROM THE PRESIDENT.

On May 9, 1904, the President issued instructions to the Commission, through the Secretary of War, as authorized by the act above quoted, placing the Commission in charge of the government of the Canal Zone, giving it the power to legislate, and appointing Maj. Gen. George W. Davis, a member of the Commission, governor of the Canal Zone. The President's letter of instructions to the Secretary of War is as follows:

WHITE HOUSE,
Washington, D. C., May 9, 1904.

SIR: By the act of Congress approved June 28, 1902, the President of the United States is authorized to acquire for, and on behalf of, the United States all the rights, privileges, franchises, concessions, grants of lands, rights of way, unfinished work, plants, shares of the capital stock of the Panama Railway, owned by or held for the use of the New Panama Canal Company, and any other property, real, personal, and mixed of any name or nature owned by the said New Panama Canal Company situated on the Isthmus of Panama. The President is by the same act also authorized to acquire for, and on behalf of, the United States perpetual control of a strip of land on the Isthmus of Panama, not less than 6 miles in width, extending from the Caribbean Sea to the Pacific Ocean, and the right to excavate, construct, and maintain perpetually, operate and protect thereon, a ship canal of certain specified capacity and also the right to perpetually operate the Panama Railroad. Having acquired such rights, franchises, property, and control, the President is by the same act required to excavate, construct, and complete a ship canal from the Caribbean

Sea to the Pacific Ocean, and to enable him to carry forward and complete this work, he is authorized to appoint, by and with the consent of the Senate, an Isthmian Canal Commission of seven members, who are to be in all matters subject to his direction and control.

By the terms of the canal convention between the United States and the Republic of Panama, entered into in pursuance of the said act of Congress approved June 28, 1902, the ratifications of which were exchanged on the 26th day of February, 1904, the Republic of Panama granted to the United States:

First. The perpetual use, occupation, and control of a certain zone of land, land under water including islands within said zone, at the Isthmus of Panama, all to be utilized in the construction, maintenance, and operation, sanitation and protection of the ship canal, of the width of 10 miles extending to the distance of 5 miles on each side of the central line of the route of the canal, and the use, occupation, and control of other lands and waters outside of the zone above described which may be necessary and convenient for the construction, maintenance, operation, sanitation, and protection of said canal or of any auxiliary canals or other works necessary and convenient for the same purpose; also the islands of Perico, Naos, Culebra, and Flemenco, situated in the Bay of Panama, and

Second. All the rights, powers, and authority within the zone, auxiliary lands and lands under water, which the United States would possess and exercise if it were the sovereign of the territory granted, to the entire exclusion of the exercise by the Republic of Panama of any such sovereign rights, power, and authority.

By the act of Congress approved April 28, 1904, the President is authorized, upon acquisition of the property of the New Panama Canal Company, and the payment to the Republic of Panama of the price for compensation agreed upon in the said Canal Convention, to take possession of, and occupy on behalf of the United States, the zone of land, and land under water, including islands within said zone at the Isthmus of Panama of the width of 10 miles extending to the distance of 5 miles on each side of the central line of the route of the canal to be constructed thereon, including the islands of Perico, Naos, Culebra, and Flamenco, and from time to time as may be necessary and convenient certain auxiliary lands and waters outside the said zone for the purpose of constructing, maintaining, operating, sanitating, and protecting the ship canal, the use, occupation, and control whereof were granted to the United States by the Republic of Panama in the said Canal Convention.

By the same act, the President is authorized, for the purpose of providing temporarily for the maintenance of order in the Canal Zone and for maintaining and protecting the inhabitants thereof in the free enjoyment of their liberty, property, and religion, to delegate to such person or persons as he may designate and to control the manner of their exercise, all the military, civil and judicial powers as well as the power to make all needful rules and regulations for the government of the Canal Zone and all the rights, powers and authority granted by the said Canal Convention to the United States, until the close of the Fifty-eighth Congress.

Payments of the authorized purchase price of $40,000,000 to the New Panama Canal Company for the property of that corporation on the Isthmus, including the shares of railway stock, and for the records in Paris, and of the sum of $10,000,000, as stipulated in the Canal Convention, to the Republic of Panama for the rights, powers and privileges granted to the United States by the terms of the said convention, have been made and proper instruments of transfer have been executed by the Panama Canal Company. The members of the Isthmian Canal Commission have been appointed. They have organized the Commission and entered upon their duties. I have taken possession of and now occupy, on behalf of the United States, the Canal Zone and public land ceded by the Republic of Panama.

It becomes my duty, under the statutes above referred to, to secure the active prosecution of the work of construction of the canal and its auxiliary works, through the Isthmian Canal Commission, and in connection with such work and in aid thereof to organize and conduct a temporary government of the Zone, so as to maintain and protect the inhabitants thereof in the free enjoyment of their liberty, property, and religion.

Inasmuch as it is impracticable for the President, with his other public duties, to give to the work of supervising the Commission's construction of the canal and government of the Zone the personal attention which seems proper and necessary, and inasmuch as the War Department is the Department which has always supervised the construction of the great civil works for improving the rivers and harbors of the country and the extended military works of public defense, and as the said Department has from time to time been charged with the supervision of the government of all the island possessions of the United States, and continues to supervise the government of the Philippine Islands, I direct that all the work of the

Commission done by virtue of powers vested in me by the act of Congress approved June 28, 1902, in the digging, construction, and completion of the canal, and all the governmental power in and over said Canal Zone and its appurtenant territory, which by virtue of the act of Congress approved April 28, 1904, and these instructions, shall be vested in said Isthmian Canal Commission, shall be carried on or exercised under your supervision and direction as Secretary of War.

Subject to the limitations of law and the conditions herein contained, the Isthmian Canal Commission are authorized and directed:

(1.) To make all needful rules and regulations for the government of the Zone and for the correct administration of the military, civil, and judicial affairs of its possessions until the close of the Fifty-eighth Congress.

(2.) To establish a civil service for the government of the strip and construction of the canal, appointments to which shall be secured as nearly as practicable by a merit system.

(3.) To make or cause to be made all needful surveys, borings, designs, plans, and specifications of the engineering, hydraulic, and sanitary works required and to supervise the execution of the same.

(4.) To make and cause to be executed after due advertisement all necessary contracts for any and all kinds of engineering and construction works.

(5.) To acquire by purchase or through proper and uniform expropriation proceedings, to be prescribed by the Commission, any private lands or other real property whose ownership by the United States is essential to the excavation and completion of the canal.

(6.) To make all needful rules and regulations respecting an economical and correct disbursement and an accounting for all funds that may be appropriated by Congress for the construction of the canal, its auxiliary works, and the government of the Canal Zone; and also to establish a proper and comprehensive system of bookkeeping, showing the state of the work, the expenditures by classes, and the amounts still available.

(7.) To make requisition on the Secretary of War for funds needed from time to time in the proper prosecution of the work and to designate the disbursing officers authorized to receipt for the same.

The inhabitants of the Isthmian Canal Zone are entitled to security in their persons, property, and religion, and in all their private rights and relations. They should be so informed by public announcement. The people should be disturbed as little as possible in their customs and avocations that are in harmony with principles of well ordered and decent living.

The municipal laws of the Canal Zone are to be administered by the ordinary tribunals substantially as they were before the change. Police magistrates and justices of the peace and other officers discharging duties usually devolving upon these officers of the law will be continued in office if they are suitable persons. The governor of the Zone, subject to approval of the Commission, is authorized to appoint temporarily a judge for the Canal Zone, who shall have the authority equivalent to that usually exercised in Latin countries by a judge of a court of first instance, but the Isthmian Canal Commission shall fix his salary and may legislate respecting his powers and authority, increasing or diminishing them in their discretion, and also making provision for additional or appellate judges, should the public interest require.

The laws of the land, with which the inhabitants are familiar, and which were in force on February 26, 1904, will continue in force in the Canal Zone and in other places on the Isthmus over which the United States has jurisdiction until altered or annulled by the said Commission, but there are certain great principles of government which have been made the basis of an existence as a nation which we deem essential to the rule of law and the maintenance of order, and which shall have force in said Zone. The principles referred to may be generally stated as follows:

That no person shall be deprived of life, liberty, or property without due process of law; that private property shall not be taken for public use without just compensation; that in all criminal prosecutions the accused shall enjoy the right of a speedy and public trial, to be informed of the nature and cause of the accusation, to be confronted with the witnesses against him, to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense; that excessive bail shall not be required nor excessive fines imposed, nor cruel or unusual punishment inflicted; that no person shall be put twice in jeopardy for the same offense, or be compelled in any criminal case to be a witness against himself; that the right to be secure against unreasonable searches and seizures shall not be violated; that neither slavery nor involuntary servitude shall exist except as a punishment for crime; that no bill of attainder or ex post facto law shall be passed; that no law shall be passed abridging the freedom of speech or of the press, or of the

rights of the people to peaceably assemble and petition the government for a redress of grievances; that no law shall be made respecting the establishment of religion or prohibiting the free exercise thereof: *Provided, however,* That the Commission shall have power to exclude from time to time from the Canal Zone and other places on the Isthmus, over which the United States has jurisdiction, persons of the following class who were not actually domiciled within the Zone on the 26th day of February, 1904, viz: idiots, the insane, epileptics, paupers, criminals, professional beggars, persons afflicted with loathsome or dangerous contagious diseases; those who have been convicted of felony, anarchists, those whose purpose it is to incite insurrection and others whose presence it is believed by the Commission would tend to create public disorder, endanger the public health, or in any manner impede the prosecution of the work of opening the canal; and may cause any and all such newly arrived persons or those alien to the Zone to be expelled and deported from the territory controlled by the United States, and the Commission may defray from the canal appropriation the cost of such deportation as necessary expenses of the sanitation, the police protection of the canal route, and the preservation of good order among the inhabitants.

The Commission may legislate on all rightful subjects of legislation not inconsistent with the laws and treaties of the United States so far as they apply to said Zone and other places, and the said power shall include the enactment of the sanitary ordinances of a preventive or curative character to be enforced in the cities of Colon and Panama and which are contemplated and authorized by article 7 of said canal convention. Such legislative power shall also include the power to raise and appropriate revenues in said Zone; and all taxes, judicial fines, customs duties and other revenues levied and collected in said Zone by or under the authority of said Commission shall be retained, accounted for, and disbursed by said Commission for its proper purposes. The members of said Commission to the number of four or more shall constitute a legislative quorum, and all rules and regulations passed and enacted by said Commission shall have set forth as a captain that they are enacted by the Isthmian Canal Commission "by authority of the President of the United States."

The Commission shall hold its regular quarterly meetings at the office of the Commission either in Panama or at a branch office in Washington, and special meetings may be held at the pleasure of the Commission.

All laws, rules, and regulations of a governmental character enacted by the Commission hereunder shall be submitted to you for your approval, and should your approval be withheld from any such law, rule, or regulation, then from that time the law, rule, or regulation shall thereafter have no force or effect.

Maj. Gen. George W. Davis, U. S. Army (retired), a member of the Canal Commission, is hereby appointed governor of the Isthmian Canal Zone. He will proceed at once to the Isthmus of Panama. He will in my name, as the chief executive in the Canal Zone, for and on behalf of the United States, see that the laws are faithfully executed and will maintain possession of said territory, including the public lands therein and the property real and movable on the Isthmus of Panama, except that of the Panama Railroad, that has recently been acquired from the Republic of Panama. He is hereby vested with the power to grant reprieves and pardons for offenses against the rules, regulations, and laws in force by virtue of action of the Commission or by virtue of the clause hereof continuing in force the laws of Panama. In case of his disability or absence from the Canal Zone at any time, the Isthmian Canal Commission is empowered to designate the person or persons to act as governor during such absence or disability. Except as herein prescribed the duties of the governor shall be fixed by legislation of the Canal Commission.

For the preservation of order and protecting the property of the United States, within or without said Zone as provided by article 7 of the canal convention, an adequate police force shall be maintained. If at any time there shall arise necessity for military or naval assistance the governor shall, if possible, promptly notify you, and in the event of a sudden exigency the governor may call upon any available military or naval force of the United States to render assistance, and the same shall be immediately furnished.

It is a matter of first importance that the most approved and effective methods and measures known to sanitary science be adopted in order that the health conditions on the Isthmus may be improved. It is the belief of those who have noted the successful results secured by our army in Cuba in the obliteration of yellow fever in that island that it is entirely feasible to banish the diseases that have heretofore caused most mortality on the Isthmus, or at least to improve as greatly the health conditions there as in Cuba and Porto Rico. I desire that every possible effort be made to protect our officers and workmen from the dangers of tropical and other diseases, which in the past have been so prevalent and destructive in Panama.

Rear-Admiral John G. Walker, U. S. Navy (retired), and Col. Frank J. Hecker, members of the Isthmian Canal Commission, are hereby designated as members of the joint commission provided for by articles 6 and 15 of the canal convention. The moiety of the necessary expenses of the Commission to be created in pursuance of articles 6 and 15 of the above-cited canal convention will be defrayed from the appropriation applicable to the ship canal to connect the waters of the Atlantic and Pacific oceans.

The Isthmian Canal Commission will prepare for Congress and place in your hands on or before December 1 of each year a full and complete report of all their acts and of the operations conducted by them in respect to the canal construction and the government of the Canal Zone. These reports will contain a detailed account of all moneys received and disbursed in the performance of their duties and of the progress made in the construction of the canal.

The necessary expenses incurred by the Commission in carrying on the government of the Canal Zone will be defrayed from the local revenues so far as the said revenues may be sufficient and the remainder will be met from the appropriation made by the fifth section of the act of Congress approved June 28, 1902. An estimate of the proposed expenditures and revenues for each year in carrying on the government of the Zone will be submitted to Congress at the beginning of each annual session.

By virtue of the ownership by the United States of about sixty-nine seventieths of the shares of the capital stock of the Panama Railroad the general policy of the managers of said road will be controlled by the United States. As soon as practicable I desire that all the members of the Isthmian Canal Commission be elected to the board of directors of the road, and that the policy of the road be completely harmonized with the policy of the Government of making it an adjunct to the construction of the canal, at the same time fulfilling the purpose for which it was constructed as a route of commercial movement across the Isthmus of Panama. If any contracts or other obligations now subsist between the railway company and other transportation companies that are not in accord with sound public policy, then such contracts must be terminated as soon as it is possible to effect that object.

No salary or per diem allowance of compensation in addition to the stated salary and per diem allowance of the members of the Isthmian Canal Commission will be allowed to any member of the Commission by reason of his services in connection with the civil government of the Canal Zone, or his membership of any board or commission concerned in or connected with the construction of the canal or by reason of his services as an officer or director of the Panama Railroad.

If there now be in force within the Canal Zone any franchise granting to any person or persons a privilege to maintain lotteries or hold lottery drawings or other gambling methods and devices of a character forbidden by the laws of the United States, or if the grantee of any such privilege has now the right to sell lottery tickets or similar devices to facilitate the business of the concessionaire, the Commission shall enact laws annulling the privileges or concessions and punishing future exercise of the same by imprisonment or fine, or both.

These instructions may be modified and supplemented as occasion shall arise.

Very respectfully,

THEODORE ROOSEVELT.

HON. WILLIAM H. TAFT,
Secretary of War.

THE TRANSFER OF THE CANAL PROPERTIES TO THE UNITED STATES.

The purchase of the canal properties was completed by the payment to the French Canal Company of $40,000,000, this sale having been finally authorized by the stockholders of that company on April 23, 1904. The instrument of conveyancy, as ratified at this meeting on April 23, 1904, contains the following:

Now, therefore, we, the New Panama Canal Company, represented by Messrs. Marius Bo and Albert Rischmann, in consideration of the payment of the sum of forty million dollars in gold coin of the United States of America to said company on its order or demand, contemporaneously with the delivery of this present conveyance to the two representatives of the United States of America first above mentioned, and the delivery to them of its property in Paris, and the certificates of said Panama Railroad shares (the property of the company not being understood to include the

treasury assets of the company, including deposits of money, outstanding credits and investments in bonds) and the delivery upon the Isthmus of Panama, to an agent of the United States of America, designated by them, or by the Attorney-General of the United States of America, of the remainder of its rights and properties, do hereby acknowledge and confirm the said sale, and do grant, sell and assign, transfer and set over to the United States of America absolutely, in full ownership, the totality, without exception, of the company's property and rights on the Isthmus of Panama and its maps and archives at Paris.

The full document is herewith submitted.

Meanwhile, the United States paid to the Republic of Panama, in accordance with the stipulations of the treaty between the two countries which had been signed on November 18, 1903, the sum of $10,000,000.

Having thus completed the purchase of the property and being entitled to enter into possession thereof, Lieut. Mark Brooke, Corps of Engineers, U. S. Army, representing the United States on the Isthmus of Panama, was instructed by the Attorney-General of the United States to take possession of all of the canal properties. This transfer of properties was made on the morning of May 4, 1904, and instructions were at once given to Lieutenant Brooke by the Isthmian Canal Commission to continue operations with the same force of employees and laborers as were engaged upon the work under the French Canal Company at that time. Lieutenant Brooke remained in charge of the work until the arrival on the Isthmus of Governor Davis.

Pending the arrival of the Chief Engineer, Governor Davis was placed by the Commission in charge of the canal construction work, and it was carried on with but slight modification of French methods, with Maj. W. M. Black, Corps of Engineers, U. S. Army, at the head of the engineering staff, until Mr. John F. Wallace, the Commission's chief engineer, arrived upon the ground.

SCOPE OF THE COMMISSION'S REPORT.

The full report of the examinations and studies of routes for a canal to connect the Atlantic and Pacific oceans, together with historical facts and a discussion of the merits of the several routes, have been published in the reports of Commissions which have preceded the present Canal Commission. No attempt will be made at this time to review these earlier studies nor even to attempt a full description and discussion of the Panama Canal project, the execution of which has been intrusted to this Commission. This report, being made at a time when the several departments which the Commission has created for a convenient subdivision of its work are still in a formative state, will be restricted to a statement of what has been done since the first meeting of the Commission on March 22, 1904. The studies that must precede the adoption of plans for controlling the Chagres River, and which will serve as a basis for determining the level of the canal, are being vigorously pushed, but they have not been advanced far enough to enable the Commission to reach final conclusions.

ORGANIZATION.

The Commission holds a relation to the canal construction work similar to that of a board of directors to a great railway enterprise, except that the Commissioners are in closer touch with their work and the majority being civil engineers, stand in the relation of consult-

ing and designing engineers to the canal work. The affairs of the Commission are conducted by the Commissioners acting as a body in frequent meetings. These meetings are generally held either upon the Isthmus or at Washington. There have been 30 meetings held on the Isthmus, 27 at Washington, and 2 at New York.

At its Washington office are stationed the Commission secretary, the general counsel, the chief disbursing officer or treasurer, and the auditor.

On the Isthmus are the engineering department, the material and supplies department, and the government of the Canal Zone. The Commission also maintains there a disbursing office and will maintain a branch of the auditor's office.

The health department, which has the importance of an independent department, has, for convenience for administration, and because its duties relate largely to the sanitation of the Canal Zone, been made a subdepartment of the Canal Zone government.

The affairs of the Panama Railroad Comany are managed by a board of directors as a separate and distinct enterprise. It does not enter into consideration as a subdepartment of the Commission organization.

The Commission has recently subdivided its work among committees, which, as originally appointed, were as follows:

Committee on engineering plans.—The engineer members of the Commission—Mr. Harrod, chairman, Mr. Burr, Mr. Grunsky, and Mr. Parsons.

Executive committee.—Mr. Parsons, Mr. Grunsky, Admiral Walker.

Committee on engineering.—Mr. Burr and Mr. Parsons.

Committee on finance.—Mr. Hecker and Mr. Harrod.

Committee on legislature.—Mr. Harrod and Mr. Hecker.

Committee on sanitation.—Mr. Grunsky and Mr. Burr.

The chairman of the Commission is ex officio a member of these committees, and General Davis is a member thereof when meetings are held on the Isthmus.

There is at present one vacancy on the Commission and on some of the above-named committees, Col. Frank J. Hecker having resigned on November 16.

The governor of the Canal Zone represents the Commission in all matters relating to Canal Zone affairs and land matters, and supervises the operations of the health department. Maj. Gen. George W. Davis, U. S. Army, a member of the Commission, was appointed governor on June 8, 1904. His executive secretary is Mr. Harry D. Reed.

Hon. Osceola Kyle is judge of the Canal Zone, Mr. J. M. Keedy, prosecuting attorney, and Mr. Tom M. Cooke, collector of revenue.

On May 6, 1904, Mr. John Findlay Wallace was elected chief engineer of the Commission, and assumed his duties on June 1, 1904. The chief engineer has been placed in charge of the Commission's engineering work, of canal construction work, of the construction of waterworks and sewerage systems for Panama and Colon, and, under the direction of the governor, he has charge of the construction and repair of buildings and of Canal Zone public works.

The engineering staff includes the following: Mr. John Seager, secretary to the chief engineer; Mr. W. J. Karner, office engineer; Mr. Carleton E. Davis, engineer in charge of waterworks and sewerage; Mr. Walter E. Dauchy, division engineer; Mr. H. F. Dosé, resident engineer; Mr. Boyd Ehle, resident engineer; Mr. Charles List,

resident engineer; Mr. A. C. Harper, resident engineer; Mr. H. W. Durham, resident engineer; Mr. E. W. Clark, resident engineer; Mr. A. B. Nichol, assistant engineer; Mr. W. B. Ruggles, assistant engineer; Mr. M. O. Johnson, supervising architect; Mr. George D. Brooke, member board of appraisal; Mr. Carl E. Strom, chief mechanical engineer.

The staff of the health department includes the following: Dr. W. C. Gorgas, colonel, U. S. Army, the chief sanitary officer, stationed at Ancon; Dr. John W. Ross, U. S. Navy, director of hospitals, stationed at Ancon; Dr. H. R. Carter, of the United States Health and Marine-Hospital Service, chief quarantine officer, stationed at Ancon; Dr. Louis A. La Garde, major, U. S. Army, superintendent of the Ancon hospital; Dr. L. W. Spratling, surgeon, U. S. Navy, superintendent of the Colon hospital; Mr. Joseph Le Prince, chief sanitary inspector of the Canal Zone; Dr. Lewis Balch, health officer, Panama.

Mr. E. C. Tobey, paymaster, U. S. Navy, is the chief of the material and supplies department. This department is directly under the Commission, but subject to the requirements of the chief engineer as well as of the governor of the Canal Zone.

The Commission's disbursing officer on the Isthmus of Panama is Mr. George C. Schafer, paymaster, of the U. S. Navy.

The principal employees in the Commission's Washington office are: Mr. D. I. Murphy, secretary; Mr. Rufus A. Lane, assistant secretary; Mr. F. E. Redfern, chief clerk; Mr. C. E. Magoon, general counsel; A. S. Kenny, pay director, U. S. Navy, retired, treasurer; Mr. N. S. Faucett, deputy treasurer; Mr. W. P. Armstrong, auditor; Mr. W. W. Warwick, deputy auditor.

FIRST VISIT OF THE COMMISSION TO THE ISTHMUS OF PANAMA.

The full Commission first arrived on the Isthmus on April 5, and established provisional headquarters in the buildings erected for the residence of Mr. De Lesseps. These are situated on an artificial plateau built upon a coral reef, jutting out from the east shore of Limon Bay. This settlement soon assumed the dimensions of a village, occupied by the officers, warehouses, and quarters of the first French Canal administration. It is known as Cristobal, and lies in the Zone immediately outside the delimitation line established on June 15 around the city of Colon. It has close connection with the Panama Railroad by sidings and spur tracks, and will become of great importance as the Atlantic terminal port of the canal.

A cordial reception was extended the Commission by the authorities of the Republic of Panama and the city of Colon.

During this visit the Commission occupied itself thoroughly with a study of the plans and methods of work as then carried on by the New Panama Canal Company and with an examination of the physical conditions of the proposed canal route and of the adjacent territory, where its auxiliary works will probably be established. In this the Commission was assisted by Maj. Wm. M. Black and Lieut. Mark Brooke of the United States Corps of Engineers, and by the resident representative of the New Panama Canal Company.

Each day, during their stay on the Isthmus, the Commission visited points where work had been done, or was then being done, under the

two French administrations, or where previous studies indicated that there was a choice of location for the canal, or of treatment of the necessary auxiliary works. At the time of this visit the only work in progress was the excavation of the Culebra Cut through the divide between the two oceans. The outfit here consisted of a few French steam excavators and dump trains and a force of about seven hundred men engaged in blasting, loading cars, removing the excavated material from the track and down the slopes of the fill. Neither the equipment nor the organization of the force could be considered as adequate, or in any way fitted for the prompt removal of the great mass of material in the cut.

It was, however, considered advisable, when the Commission assumed control, to continue the employment of the existing force and tentatively to introduce changes of organizations and an increase of equipment. The retention of the labor already acclimated, and, in some degree familiar with the work, was very desirable.

From the examination which the Commission was enabled to make during this visit of the studies under the two French canal administrations, of their plans and of the physical conditions of the Canal Zone, it was evident that new and extended surveys and examinations were required before conclusions could be reached in many of the most important problems of location and construction presented by a canal of the character and dimensions now proposed by the United States.

Under M. De Lesseps and the New Panama Canal Company a large amount of investigation was done of an accurate and scientific kind and affording much valuable information. But its usefulness is limited by the difference of the standpoints from which the work was approached twenty-five years ago and to-day. This, to a large extent, is due to the immense increase of dimensions of waterway demanded by the ships of to-day and the near future. The experience of a generation has also so added to the resources of engineer and contractor that methods then untried are now considered usual and safe.

But the radical difference is that the French canal was a commercial enterprise based on a time concession. It must be completed at a cost on which the traffic would yield a reasonable revenue, and within a limited time. Under these exigencies of resources and of time the original intention of a sea-level canal was abandoned and successive reductions made in the amount of excavation work until a lock canal, with a summit level of 110 feet above mean ocean tide, was seriously proposed, and it was only on the reorganization of the enterprise, and an extension of the time limit, that a return was made to a plan with a summit level of 61.5 feet.

While the French surveys were scientifically undertaken and conducted, yet whenever their results showed that the project which they were intending to develop was too costly or would require more time than was available, the object for their continuations no longer existed. Therefore, while many of them led in the right directions, they did not go far enough to secure the full information which is required for the construction of the larger canal.

The work as now proposed is free from these limitations, and its declared object is to give the most convenient and safe transit from ocean to ocean for the ships of to-day and the visible future, for which any canal proposed by the French companies would be entirely inadequate.

Among the objects of continuation of surveys by the Commission may be mentioned the determination of the practicability of a sea-level canal from the point of view of the greater cost and time required for its completion. Connected with this is the possibility of constructing a storage dam at Gamboa, and of wasting, from the lake above, the surplus discharge of the Chagres River.

If full investigation should show the impracticability of a sea-level canal the information necessary to decide on a summit level and the location and number of locks required for a high-level canal must be acquired by further surveys. Other questions, still unanswered, are the possibility of a dam at Gatun to extend the length of open navigation, the relative advantage of the low-level or Tiger Hill route from Bohio to Gatun, and the Caribbean entrance to the canal at Cristobal.

Under these conditions it seemed to the Commission that the step which at that time would most effectually contribute to the progress of the work was the immediate organization of surveying parties to procure all information bearing on these and other problems.

To carry out this object the Commission returned to the United States on April 29. In the organization of these surveys it was fortunate that many of the most efficient members of the parties who were made familiar with Central America surveying by service under previous canal commissions were anxious to return to the Isthmus.

HARBOR AT CRISTOBAL.

The problem of a suitable interior harbor at the Colon terminus of the canal was never completely solved by either the Old Panama Canal Company or the new, nor was anything more than a tentative plan for purposes of estimate considered by the former Isthmian Canal Commission. The development of such a harbor plan, therefore, was one of the first questions of the entire work to confront the present Commission. This harbor is of special importance from the fact that it must be the point of delivery of a large portion of the plant and material required in the construction of the canal. Inasmuch as those deliveries have already been begun, and as they will continue during the greater part of the actual work of construction, it is of the utmost importance that the harbor plans should be completed at the earliest possible date. This work includes not only the harbor proper immediately inside of the canal entrance, but also the deep channel leading to it through a portion of the shallow waters of Limon Bay.

One engineering party, therefore, was assigned to the duty of making complete surveys and examinations, including many borings throughout that portion of the partially excavated canal prism at and near its entrance and along the center line of the proposed deep channel leading to the canal entrance and over a considerable area between the canal line and Limon Bay for the purpose of conclusively settling alternative locations for the canal in the vicinity of its entrance. These investigations have been actively carried on since the latter part of June and have now been so nearly completed that the development of the final plans for both the deep-water channel and the inner harbor, including about a mile of the canal line immediately within the entrance, will be concluded within the next two or three months. In the meantime temporary facilities for the immediate discharge of

cargo from ships bringing plant and material to the canal entrance at Cristobal are already partially completed.

In connection with this interior harbor excavation a large amount of filling of low ground will be performed within the limits of Cristobal and the city of Colon which has a most important bearing upon the sewer system and other sanitary provisions to be made for the city of Colon. Extended reference is made to this filling in that portion of the report relating to the sewer system for the city of Colon.

PROPOSED DAM AT GATUN AND TIGER HILL ALTERNATIVE.

A second party of engineers was assigned to the work of making surveys and investigations including borings in the vicinity of Gatun, about 5 miles from the Colon end of the canal, with a view to securing data in connection with a possible dam across the Chagres River at that point. The valley of the Chagres is somewhat less than a mile wide at Gatun, and there are outcroppings of soft rock within the limits of the floor of that valley. Question has been seriously raised as to the practicability of building a dam across the Chagres River at this point so as to form a lake possibly 20 or 25 miles long and thus avoid the necessity both of building a dam at Bohio and of excavating the canal prism between Gatun and Bohio. The same engineering party is making examinations by surveys and borings of an alternative line for the canal between Gatun and Bohio by way of Tiger Hill, a distance of about 12 miles. This proposed relocation would save about 1¼ miles in distance and would remove the canal line farther away from the Chagres River on to somewhat higher ground. That removal, however, would necessitate carrying the canal within embankment of considerable height in soft ground and it would destroy the availability of a large amount of canal excavation made by the Old Panama Canal Company between Colon and Bohio. This work of investigation along the alternative Tiger Hill line is nearing completion and the requisite data for finally determining the location of this portion of the canal line will be available to the Commission in the near future.

The force having in charge the surveys and examinations on the alternative line between Bohio and Gatun is also making further investigations relating to a possible site for a dam across the Chagres Valley at some intermediate point between those limits. While it is scarcely expected that these investigations will result favorably to such a construction, the outcrop of rock at a number of points has prompted the Commission to secure all possible information of this character.

BOHIO DAM.

The plans of the New Panama Canal Company as far as developed, and the tentative plans of the former Isthmian Canal Commission, contemplated a great dam across the Chagres River near Bohio, about 17 miles from Colon, at the head of the Caribbean tide-level section of the canal. A considerable amount of investigation work has therefore been done at and in the vicinity of this site by both the New Panama Canal Company and the former Isthmian Canal Commission, but far more by the latter than the former. The probable construction of

this dam for the purpose of forming a summit level of a canal with locks is of such importance that it is necessary to make further and extensive investigations, chiefly by boring, to determine at what section of the geological valley the bed rock offers the most advantageous location. The borings thus far made disclose the maximum depth of bed rock to be somewhat greater than is desirable. A large field force began this investigation in the early part of July, and has continued it to the present time. It is still at work, and its operations will be continued until the data for this entire vicinity are complete. This field force is also making other surveys bearing upon the location of the canal a few miles southerly of Bohio.

The floods of the Chagres River are at times so sudden and of such magnitude that from the inception of the work of the Old Panama Canal Company to the close of the investigations of the former Isthmian Canal Commission, it has been considered of the utmost importance to control them effectually, whether the sea-level canal or a canal with locks be constructed. In the former case it would be highly objectionable to receive the flood waters of the river into the canal, as it would be difficult to prevent damage by the currents induced on the one hand, and by the silf, sand, and gravel brought in on the other. Whatever measures might be adopted to control either of these sources of difficulty serious questions would probably result from either one or the other cause. In the case of a canal with locks being built the method of controlling the floods proposed by the former Isthmian Canal Commission would be both simple and effective, but they would require some modification and adjustment if the summit level were as much as 20 or 25 feet lower than contemplated by that body. Again, it would be feasible to create a reservoir on the upper Chagres by building a great dam either at Gamboa, as was at one time contemplated by the Old Panama Canal Company, or at a point farther up the river, as at Alhajuela, as planned by the New Panama Canal Company, as supplementary to whatever means of control might be adopted lower down the river. If a canal with locks should be built, this supplementary reservoir might ultimately be needed for additional water supply. Further, the possibility of diverting the waters of the upper Chagres River southward into the Pacific Ocean through a long tunnel piercing the Cordillera forming the continental divide in that vicinity, or possibly a shorter tunnel through the divide on the northerly side of the Chagres Valley toward the Caribbean, was seriously considered by both the Old and New Panama Canal companies. They even made surveys sufficiently extended to indicate that a tunnel about 10 miles long would be required for the diversion toward the Pacific.

All these earlier investigations were sufficient to disclose considerable data bearing upon the control of the waters of the upper Chagres; they were not far enough to settle conclusively the problems depending upon them and relating to the construction of a dam at Gamboa or to the construction of either of these two diversion tunnels.

CONTROL OF THE CHAGRES ABOVE GAMBOA.

One of the largest field parties first organized by the Commission was fully equipped to undertake and carry to completion all the surveys and investigations which would be needed for the solution of all questions as to the control of the waters of the Chagres River above

Gamboa by the construction of a dam at that point, or at some point farther up the river, or by the construction of either of the diversion tunnels to which reference has just been made. The investigations of this party involved not only reconnaissance or exploration surveys throughout the entire valley of the Chagres River for a distance of about 15 miles above Gamboa, but also the use of complete boring outfits for the purpose of determining subsurface material at the proposed dam sites and tunnel locations. This party began its work in the early part of July and has prosecuted it continually to the present time and is still actively engaged in it. A large amount of conclusive information as to the topography of the rough, wooded country in this part of the Chagres watershed and of the Cordillera and as to the subsurface material down to bed rock at the site of the proposed dam at Gamboa and in its immediate vicinity has been obta ned.

(It has been shown by the surveys of the Commission that a portion if not all of the waters of the upper Chagres River may be diverted toward the Pacific Ocean, and thus taken entirely out of the canal prism, by a dam at Gamboa and a tunnel through the Cordillera not more than 7 miles long, or toward the Caribbean by a tunnel not more than about 4 miles long.) A diversion in the latter direction is much less desirable than in the former, for the reason that such a diversion would lead the waters of the Chagres River to the canal near Gatun, about 5 miles from Colon, and make it necessary to care for them throughout that distance probably by an independent diversion canal. Obviously a diversion toward the Pacific is wholly free from any such objection. While it is probable that the work of this field party will have to be continued for a few months longer, the data which it has already secured are sufficient to determine some of the more important features of the problems upon which they bear. The remaining features, depending upon results yet to be obtained, are of a minor character and can readily await the results of further investigations without delaying in any way the development of the plans for the main project.

GENERAL PURPOSES OF ORGANIZATION.

The organization of the department of engineering and construction has been made with two distinct purposes in view. The first of these purposes covered the entire field work, including surveys and investigations necessary for the solution of all problems preliminary to the development of plans for the entire project of a ship canal between the two oceans and the design and construction of waterworks and sewer systems for the cities of Panama and Colon. The second purpose was the formation of the preliminary organization in such a manner as to merge efficiently into the permanent organization ultimately required for the actual construction of all classes of work embraced in the entire engineering construction within the limits of the Canal Zone. The preliminary organization now existing covers the four main field parties conducting the surveys and investigations elsewhere described, the two divisions of the engineering force having in charge the design and construction of the waterworks and sewer systems for Panama and Colon, and an engineering party engaged in such operations at and in the vicinity of the great Culebra Cut as is necessary for the systematic and efficient conduct of the work now in progress there. The operations of these various parties cover prac-

tically the entire canal line between its termini. The important work of surveys and investigations on the upper Chagres River covers its valley between Gamboa, where the course of the river first meets the canal line, and a point nearly 15 miles upstream from Gamboa. This entire work has been vigorously pressed, first under the immediate direction of the managing representative of the Commission from the earliest moment at which it was possible to organize the various field parties and afterwards under the immediate direction of the chief engineer subsequent to his appointment and arrival on the Isthmus. This preliminary work is nearly completed so that the studies for the features of the general project can soon be undertaken.

It is the purpose of the Commission to install and put at work at the earliest practicable moment a considerable number of large steam shovels, which have been purchased in the United States, in order to ascertain by actual trial certain important information regarding practicable rates of progress and of cost of work under the conditions existing along the canal line. Two of these shovels have already reached the Isthmus and will soon be at work. A similar line of experimental or investigation work upon a full scale of construction operations is to be undertaken in connection with the harbor excavation at Cristobal. The Commission regards these full-scale working operations of the highest value in order to determine reasonable requirements for rates of progress and to secure reliable information by actual trial as to reasonable unit costs of subsequent construction.

It has been found feasible to bring into usable condition much more of the machinery and plant turned over by the French company than was at first anticipated. It is the purpose of the Commission to make available in all future construction work as much of this machinery and material as can be advantageously used, and much progress has already been made in this direction, including the reestablishment of a machine shop of considerable capacity at Gorgona, where much heavy construction and repair work has already been done and is being done. The feasibility of excavating the Culebra Cut by the hydraulic method used in much mining work has been considered by the Commission. A thorough study of this method of excavating was made on the Isthmus by Mr. H. A. Bingham, of San Francisco, who has extended experience in this special field of mining work. Mr. Bingham's report on this matter has been made and is on file in the office of the Commission.

WATERWORKS AND SEWER SYSTEM FOR PANAMA AND COLON.

An engineering force for the special purpose of designing and constructing waterworks and sewer systems for the cities of Panama and Colon was organized in the month of June, 1904, and sailed from the city of New York soon thereafter. This force was so organized as to carry on its work under suitable supervision concurrently in both of these cities.

Some partial surveys of the city of Panama had been made, but no surveys or other examinations were available for the city of Colon. While the work already done at Panama was utilized as far as practicable, it was necessary to make essentially complete examinations and surveys for both the cities of Panama and Colon and of the districts about them in which possible sources of water supply might be found.

These surveys were made also with a view to securing the complete data required for the design and construction of a sewer system in each of the two cities.

CITY OF PANAMA.

WATERWORKS.

Prior to the arrival of this field party the chief engineer had taken under consideration the project of supplying water to both cities in conference with Governor Davis, with the result that tentative selection was made for the water supply of Panama at the headwaters of the Rio Grande, about 10 miles from the city, near the southerly extremity of the great Culebra Cut, where the Old Panama Canal Company had a reservoir formed by building a masonry dam across the river, a small stream at that place. Subsequent surveys confirmed the wisdom of this tentativ selection, and the Rio Grande Reservoir, with an increased height of dam, was finally adopted for the water supply of Panama. The additions to the existing dam will raise the elevation of the water surface in this reservoir to 212 feet above mean high tide. A 16-inch cast-iron pipe will form the conduit for conveying the water from the Rio Grande Reservoir to a distributing reservoir now in process of construction on the summit of a small hill at Ancon, where the surface of the water in it will be 137 feet above tide. This reservoir has a capacity of 1,000,000 gallons and is constructed with two compartments, so that either may be used while the other is being cleaned or repaired.

This plan affords a gravity supply, the distributing reservoir being high enough to supply all parts of the city of Panama proper by its own head. The buildings at Ancon will alsolargely be supplied from this same distributing reservoir. There are, however, the hospital and other government buildings which, on account of their increased elevation, will ultimately be supplied by a suitable small pumping plant.

Contracts for supplying the cast-iron water pipes, hydrants, valves, and other fittings have already been awarded to manufacturers in the United States and the material will be shipped at an early date. The work of construction of the entire system is being rapidly pressed toward completion, and it is believed that the first public water ever supplied to the city of Panama will be made available to the people of that city in the early part of 1905.

This water-supply system has been designed on the basis of supplying 60 gallons per head per day for a population of 30,000 people, although it is confidently believed that the source of supply is abundant for a much larger daily draft.

It is not improbable that a reservoir formed by a great dam across the Chagres River at Gamboa or some point farther upstream may be built in the course of the construction of the canal. In that case such a reservoir would be easily available for a water supply for both the cities of Panama and Colon and for all the population on the Canal Zone between these terminal points. If this development should prove to be advisable hereafter the pipe line now being constructed from the city of Panama to the Rio Grande Reservoir would be available throughout its entire length for the new conduit.

The details of connection at the distributing reservoir at Ancon are of such a character that in case of exigency water may be conveyed from the 16-inch conduit directly into the distribution system of the city without passing through the reservoir. The distribution system connecting the distributing reservoir with the different parts of the city has been laid out so as to serve efficiently all the buildings of the entire city wherever it is desirable that house or other building connections should be made. At other points on the streets or other public places where portions of the population may not have sufficient means to make house connections, hydrants or other taps have been provided and located so that water may be readily obtained without other cost than the effort to draw from the taps. All the details of the distribution system will be adapted to the local needs to serve conveniently and efficiently the requirements peculiar to a tropical climate. As the city grows in population and in area covered by buildings the adopted system may readily be extended to meet the needs of the increased population.

Before proceeding with the construction of the water-supply system a considerable number of samples of water from the Rio Grande Reservoir were submitted for both bacteriological and chemical analysis to Messrs. Hazen and Whipple, of New York City, before even the banks and bed of the reservoir had been cleaned of vegetation. Those analyses showed the character of the water to be satisfactory, and it will be found improved in quality by the thorough cleaning of the entire reservoir site of all vegetable matter. If, however, at any time in the future it should prove desirable to filter the water, the vicinity of the distributing reservoir is such as to afford a suitable location for the requisite filters.

This system of water supply for the city of Panama is being designed and constructed in accordance with the best waterworks practice at the present time, so as to secure not only excellence of work and materials but also a quality of water to which no exception can be taken.

CITY OF PANAMA, SEWER SYSTEM.

The city of Panama has no sewer or drainage system. There are a few drains constructed near the surface without much regard to grade, some of which may possibly be considered as crude sewers. Those drains, in consequence of the disregard of proper grades, frequently hold polluted surface water and other organic matter which, under the influence of tropical climatic conditions, make them highly objectionable. It was necessary, therefore, to design and construct an entirely new system of sewers for every portion of the city, having careful regard both to the topography of the city's site and the permanent grades of the streets. Such a plan has been developed under the direction of the chief engineer and is now in process of construction.

A combined system has been adopted, but not with the intention of receiving the entire rainfall. It has been assumed that the greatest discharge of sewage will be an the basis of 60 gallons per head of population per day, and the system has been designed to offer accommodation in addition thereto for 1 inch of rainfall per hour; in other words, the capacity of discharge of the sewer system to be constructed is equal to 60 gallons per head of population per hour. Any rainfall in excess of 1 inch per hour will be discharged through surface drains.

The requisite catch-basins have been provided to accommodate that portion of the rainfall to be taken off through the sewers.

This sewer system, like the distribution system of the water supply, is so designed as to be readily extended into the more outlying portions of the city, as they may be built upon and occupied for either residence or business purposes. The length of the entire system of sewers and the outfalls, as at present designed, has a total of over 92,000 feet, i. e., nearly 18 miles. Provision is made for 200 manholes, 150 catch-basins, and 10 automatic flush tanks.

The city is divided into three main sewer districts, each one of which has an outfall 18 inches in diameter into the Bay of Panama. The sewage is discharged from the sewer system into the sea water of Panama Bay at points so far removed from high-water mark that it is completely diluted and can not become objectionable at any point on the margin of the city.

The total estimated cost of this sewer system is $256,450.

CITY OF COLON, WATER SUPPLY.

The city of Colon is built upon a flat sandy island, no part of which is more than about 4 feet above mean sea level. Indeed, considerable portions of it are covered with water at high tides caused by high winds from the north. A portion of the city occupied by officials and other employees of the Panama Railroad and by the foreign consuls is already supplied with water brought by the railroad company through a small iron pipe from a small reservoir containing water of somewhat indifferent quality near Mount Hope, about 2½ miles from the city. The remainder of the population supplies itself from rain water falling upon the corrugated iron roofs of buildings and collected in iron tanks. There is no suitable and sufficient surface-water supply readily available in the near vicinity of Colon. Investigations, however, are being made to discover as soon as possible either some more remote surface source or a subsurface supply from the deep sands and gravels south of the city along the district traversed by the canal line or in some other quarter. The search for wholesome public water supply for Colon has not proved to be so easily successful as that for the city of Panama. The Commission's investigations, however, are being actively prosecuted in all directions, and it is expected that by the early part of the coming year at farthest the problem of palatable water supply for Colon will be solved, although at the present time a report of progress only may be made.

CITY OF COLON, SEWER SYSTEM.

In consequence of the low elevation of the site on which the city of Colon is built, the problem of designing a suitable system of sewers for the city, although a small one, involves some difficulty. It is clear to the Commission that some portions of the town must be filled so as to raise their general surface to a suitable elevation. This filling will be composed entirely of excavation from the inner harbor constituting the entrance to the canal, the plans for which are now being carefully considered and will be completed at an early date.

On the other hand it may be advisable to cut channels through other portions of the island in which the tidal waters may ebb and flow.

Obviously, a final plan for a sewer system can not be elaborated until these fundamental questions of filling are settled. All these investigations are in an active and forward state of progress although not yet complete. While it is obviously imperative to complete both the water supply and sewer systems for the city of Colon at the earliest date practicable, the relatively small population, probably not exceeding 6,000, and the close proximity of the sea water of the bay, make it more easy to control the sanitary conditions throughout the period required for the maturing and execution of satisfactory water and sewer plans than would otherwise be the case.

To sum up the situation, therefore, it may be stated that the requisite surveys and investigations necessary as a basis for complete and satisfactory plans for water supply and sewer systems for the city of Colon are being actively prosecuted and will be completed at an early date.

ENGINEERING AND CONSTRUCTION OPERATIONS.

The engineering work of the Commission had its beginning in the organization of four engineering parties, each in charge of a resident engineer. This preliminary work was begun in the early part of 1904, immediately after the return of the Commission from its first visit to the Isthmus during the month of April. At this time the chief engineer had not been appointed. The first of these engineering parties sailed from New York about the middle of May, 1904, and the remainder of this preliminary force followed soon after.

The engineering force, to which was assigned the work of making surveys for and the construction of waterworks and sewer systems for Panama and Colon, was organized the latter part of June and sailed for the Isthmus shortly thereafter. These preliminary engineering forces, five in all, embraced a total of about 100 men.

Mr. John F. Wallace, chief engineer, as above stated, entered upon his duties on June 1, 1904.

The field work of the engineering force of the Commission naturally being preliminary to construction and having for its first purpose the execution of such surveys and investigations as will furnish the data for the determination of the main features of the entire project of a ship canal between the Pacific and Atlantic oceans, was necessarily planned largely in view of the great amount of work already performed by the old and the new Panama Canal companies and bore some relation to the tentative plans developed by the former Isthmian Canal Commission. At the same time the engineering work of the present Commission was undertaken with the view of treating the entire project with complete independence of anything that had gone before, so far as a general plan for a ship canal was concerned. Broadly stated, the Commission has before it at the outset the work of determining whether this ship canal shall be a sea-level waterway or a canal with locks, and if it is to be a canal with locks at what elevation the summit level shall be placed and what shall be the location, number, and lift of the locks. At the same time the great question of water supply of the canal, the control of the Chagres River, especially when in flood, and certain larger details of alignment, section of prism and plans of harbors at the two termini of the canal and other questions of less magnitude are to be conclusively settled. The disposition of the engineering forces organized at the beginning of the Commission's

work was made so as to attack these problems efficiently and in such order as to lead to the earliest possible beginning of actual work of construction.

When the United States Government took possession of the canal property on the Isthmus the New Panama Canal Company had about 700 men engaged in the work of excavation at the deepest part of the great Culebra Cut, in connection with the occasional use of one or two bucket excavators of the type in use by the Old Panama Canal Company during its period of activity between the years 1881 and 1889. In addition to this excavating machinery, in ill-working condition at Culebra, an immense amount of plant and material of almost every conceivable kind, and which has been fully described in the report of the former Isthmian Canal Commission, came into the possession of the United States Government in the transfer of the canal property. Much of this plant and material is located in warehouses at a number of points on the canal line between Colon and Panama, while the remainder is distributed without cover along considerable portions of the line.

Immediately upon the arrival of the chief engineer at Panama, the working force at Culebra was entirely reorganized so as to bring it into a more efficient condition, the plant was overhauled, repaired, and made more effective, and at the same time a system of field accounts and reports was devised and put into use so that a complete record of progress and cost of all classes of work being prosecuted might daily be maintained. Three other excavators in the vicinity of the Culebra Cut were repaired and brought into effective working condition. This reorganized force has been maintained and improved so that it might be conserved as a nucleus from which the ultimate complete working force of the entire canal construction can be developed.

Up to the month of October this force became smaller than when it was originally turned over by the French company, but owing to the gradual increase of working plant, chiefly by the purchase of large steam shovels from the United States, an additional force will soon be necessitated and engaged. It is expected that this increase of labor force with the increase of plant will be constantly maintained. The revival of the work of construction of the canal and the maintenance of this organized force is proving to be, as was intended, an inviting center toward which efficient laborers are moving.

SANITATION.

Appreciating the importance of taking every possible precaution for the protection of the health of the employees of the Commission on the Isthmus, as well as of the inhabitants of the Canal Zone, the Commission lost no time in organizing a health department. Preliminary steps were taken in April. The Commission on its first visit to the Isthmus was accompanied by Dr. W. C. Gorgas, colonel, U. S. Army; by Dr. John W. Ross, U. S. Navy; by Dr. L. A. La Garde, major, U. S. Army, and an engineer officer of the Army, Capt. (now Maj.) C. E. Gillette -all of whom were detailed for the special service required by the Commission relating to a study of conditions as they existed on the Isthmus at the time of taking possession of the canal properties by the United States.

The medical officers aboved named are of the staff which operated with such signal success during the American occupation of Cuba, and all have found places on the staff of the medical department of the Commission as subsequently organized.

This first inspection of conditions preceded by a few weeks the formal transfer of the canal properties and led to recommendations which enabled the Commission to announce a preliminary organization of the health department almost as soon as it was placed in control of the canal properties and of the Canal Zone. The final organization of the health department was perfected in August.

It was fully realized that the reputation of the Isthmus of Panama for unhealthfulness—whether this reputation was deserved or not—justified, and, in fact, made imperative the adoption of extreme measures for the prevention and cure of disease. Adequate provision has therefore been made to prevent the introduction of contagion, to wage effective war against the disease-spreading mosquitoes, and for the efficient care of the sick. This has been done not only with due regard to the immediate requirements, but the organization of the department is such that it can be enlarged and expanded as may be required to meet any emergency.

The department of health, with jurisdiction extending beyond the limits of the Canal Zone into the cities of Colon and Panama and over the waters adjacent thereto, is a branch of the government of the Canal Zone and has been made an administrative department of the Canal Zone government.

The affairs of the health department are administered by a board of health, composed of four members, as follows: The chief sanitary officer, the director of hospitals, the chief quarantine officer, and the chief sanitary inspector of the Canal Zone.

The chief sanitary officer has been made the executive head of the department, empowered to direct its operations, enforce sanitary regulations, and report to the governor relative to the operations of the department.

Under the chief sanitary officer are the following subdepartments and suboffices: A subdepartment of hospitals, under a director of hospitals, embracing a hospital at Ancon, a hospital at Colon, three emergency hospitals, and several additional dispensaries along the line of the canal; a maritime quarantine service; a sanitary service for the Canal Zone; a Panama health office, and a Colon health office.

There were found upon the Isthmus, as a part of the Canal properties, an extensive hospital established at Ancon, immediately adjacent to Panama, located on the northeasterly slope of the hill, from which it takes its name, and a hospital, or rather several neglected hospital buildings, at Colon. Both of these hospitals were without adequate medical staffs and, in lieu of trained nurses, the Sisters of the Order of Saint Vincent de Paul attended upon the sick.

The buildings of the hospital at Ancon were found to be in fair condition, all, however, requiring more or less repair. These buildings were all originally well constructed, resting upon masonary piers and having tile roofs. They are being repaired and adapted to modern hospital requirements as rapidly as possible.

The capacity of Ancon hospital is about 500 beds, but in case of an emergency sufficient ward space is available to place upward of 700 beds.

Two of the ward buildings at Ancon were found to be in possession of and used by a local organization known as the "Comision de Beneficencia," which was organized for the care of the strangers becoming sick at Panama. The lease of these buildings to this society was terminated by the Commission, and the Commission assumed the care of the patients who were in this hospital.

Besides the hospital buildings already referred to as forming part of the canal properties at Colon, there is at Colon a second hospital owned and operated by the Panama Railroad Company. This hospital is to be transferred to the Isthmian Canal Commission, and will form a part of the Commission's Colon hospital.

The work of repairing and remodeling the hospital buildings at Colon is already well advanced, and some additional structures are being erected, it being the purpose of the Commission to bring the Colon hospital to a capacity of about 300 beds.

In addition to the hospitals at both ends of the canal, emergency hospitals, each with a capacity of four to eight beds, are to be established as may from time to time be required along the line of the canal at points where a considerable number of canal laborers or inhabitants of the Zone may be resident. Three such emergency hospitals have already been authorized, being located at Culebra, at Gorgona, and at Bohio. The physician at each of these emergency hospitals will also be in charge of a dispensary. Two additional dispensaries not combined with emergency hospitals have been authorized.

All employees of the Commission stationed upon the Isthmus are entitled to free medical treatment and medicines. It is proposed to care for the sick in the hospitals in all cases of serious illness. The patients not only receive better care in the hospitals than they could elsewhere, but the special precautions taken at the hospitals to prevent the spread of disease by insects safeguard the public health.

It being a special duty of the board of health to prevent the spread of contagious and infectious diseases and to stamp out, if possible, the malarial types of fever, unusual efforts are being made to destroy the mosquitoes which spread yellow fever, malarial fevers, and other diseases. This work has been intrusted in the Canal Zone to a well organized staff of sanitary inspectors. Water containers are being covered, ponds and pools of standing water are being drained or covered with oil to prevent the breeding of mosquitoes, and special care is taken to dispose properly of all filth accumulations and waste of all kinds. The Commission, after careful consideration, has thought it desirable to incorporate its sanitary rules and regulations in a law which is elsewhere published as a part of this report.

There has also been organized an effective quarantine service and there are now being established thoroughly equipped quarantine stations, one on the island of Flamenco, near Panama, and the other on the hospital grounds at Colon. The quarantine regulations will be found published in the laws of the Canal Zone.

The treaty between the United States and the Republic of Panama makes it incumbent upon the Government of the Republic of Panama to enforce such sanitary rules and regulations, as may be prescribed for Panama and Colon by the United States. The Commission has adopted such rules and regulations, not only for Colon and Panama, but also for the quarantine service of these ports. These regulations

are being put into effect by the proper authorities, and in case of failure to comply therewith the Commission will, as authorized by the treaty, take the necessary steps to enforce the same. The Commission has named health officers for each of the cities of Panama and Colon, whose duties are to supervise the work of sanitation in these cities and to take cognizance of all suspected cases of contagious or infectious disease. The board of health of the Commission is charged with the duty of prompt action in all such cases, it being the policy of the Commission to have all persons afflicted with yellow fever or similar diseases cared for in such a way as to reduce the danger of a spread of the disease to a minimum.

After a careful investigation of the requirements of the health department, it was, at the time of its organization, estimated that the expenditure for repairs to buildings, the erection of new buildings, proper equipment thereof, medicines and supplies, and compensation of the staff of employes would aggregate, in the ten months of service succeeding August, 1904, about $1,100,000. The expenditures during the next year may possibly exceed $800,000. It can not now be foreseen whether the expenditures of this department will continue throughout the entire period of the canal construction as the above figures indicate, or whether the experience of the first few years will justify a decrease, or will demand additional allowances. It is confidently hoped by the Commission that the diseases prevalent in the past upon the Isthmus, and which have given it its bad reputation for unhealthfulness, will be brought under control and that epidemics of disease will be entirely prevented.

As soon as the Commission has decided upon the details of the great canal project, steps will be taken to bring an ample supply of water of good quality to every settlement along the line of the canal.

As the Commission is interested in preventing the spread of disease, inquiry has been made relating to the care of the sick by the Panaman authorities. All institutions in which the indigent or afflicted are cared for were found to be in deplorable condition; but there is some promise of improvement. There is a city hospital at Panama, known as the Hospital San Tomas, which is managed by a board of five directors. It has an income of about $1,500 silver, per month, mainly contributed by the Government of the Republic of Panama. The number of sick in this hospital during last summer averaged about 150. Patients at this hospital are charged for medical attendance and care at rates dependent upon the financial ability of the patient to pay. Soldiers are charged 60 cents silver per day and policemen $1 silver. The indigent of the Republic of Panama, and those afflicted with chronic ailments, are cared for at Panama in an almshouse, known as "Asilo de Bolivar." This has at present about 70 inmates, and is managed by a committee appointed by the President of the Republic. Its buildings and grounds belong to the Republic. It has a regular income of between $600 and $700 silver, per month, in addition to some private subscriptions. Should it ever become apparent that the poor, the aged, the infirm, and vagrants of Panama as well as of the Canal Zone must be cared for by the government of the Canal Zone as a measure to prevent the spread of disease, a plan is in contemplation which will distribute this burden equitably between the two Governments interested.

The Republic of Panama at present has no suitable provision for the care of lepers nor for the care of the insane. There has, however,

recently been made by the Republic of Panama an appropriation of $50,000 silver for the construction of new buildings in which lepers are to be cared for. The insane are kept confined in a few rooms at the city prison at Panama. It is quite probable that means may be found in the future for the joint care of lepers and the insane by the Republic of Panama and the Canal Zone governments.

In the management of its hospitals and its dispensaries it is the plan of the Commission, as already stated, to grant free treatment, care, and medicines to its employees; all other persons receiving treatment or furnished with medicines are expected to pay.

In the case of such service rendered to employees of the Panama Railroad Company or to those of steamship lines, special rates have been fixed. In other cases the charges made must depend largely upon the ability of the patients to pay.

SYSTEM OF ACCOUNTING.

Being entrusted with the expenditure of large sums of money the Commission has not been unmindful of the fact that full and complete accounting of its expenditures is required, and that disbursement of the funds placed at its disposal must be so safeguarded that the risk of loss by error or by dishonest acts of its employees will be reduced to a minimum. It was not possible to introduce a system of classification of accounts until the Commissioners and the heads of the departments which it had organized had become familiar with their duties and the practical conduct of their affairs, which relate not only to the canal construction work, but also to the governing of the Canal Zone, the levying and collection of taxes and imposts, the protection of the public health in the Canal Zone and in the cities of Panama and Colon, and the construction of sewerage and waterworks systems for these cities. The purchase, care, and issuance of machinery, instruments, material, and supplies also required consideration in the plan of accounting. As the several departments operating under the Commission are not yet fully organized it goes without saying that the system of accounting will remain for some time in a similar process of further development.

The first steps looking toward the adoption of a system of accounting on most advanced lines were taken within a few days after the organization of the Commission. This matter also received attention during the first visit of the Commission to the Isthmus, in April.

As soon as a disbursing officer had been selected, conferences with the representatives of the Secretary of the Treasury and with the Auditor for the State and other Departments were arranged, and along lines suggested by the Commission, a plan of classification of accounts was elaborated and subsequently adopted by the Commission. This could not be done, however, until after the operations on the Isthmus had been sufficiently studied and analyzed. The Commission was therefore accompanied on its August and September trip to the Isthmus by its treasurer (disbursing officer), A. S. Kenny, Paymaster-General, U. S. Navy (retired), and by a deputy auditor, and adopted a classification of accounts on the recommendation of its treasurer. This classification is simple, sufficiently elastic to permit expansion or contraction to any extent hereafter desired, and so arranged that it shows the amount of money expended for all purposes, suitably and

minutely classified. In this system of accounts the expenditures will be grouped in seven main classes: General administration; government of Canal Zone; sanitation; canal construction; land, buildings, and plant; material and supplies department, and deterioration and loss.

Each of these main classes has its subclasses, which are again divided, provision being made at the outset for entries under more than 400 different headings.

As the Commission's work progresses it will always be possible to give precise and correct information of the cost of any portion thereof and to account fully for all moneys received.

The disbursements of money will be made in the method customary with the various Departments of the Government. The disbursing officer of the Commission pays by check upon the United States Treasury. All demands will pass through the office of the auditor of the Commission before being paid.

Disbursing officers are stationed on the Isthmus as well as at Washington, and the auditor will have his duties divided between the Isthmus of Panama and Washington.

In its organization of the government of the Canal Zone the Commission has provided that the disbursing officer of the Commission stationed on the Isthmus shall also be treasurer of the Canal Zone government. It has similarly provided that the Commission's auditor shall be auditor for the Canal Zone government.

The Commission proposes to introduce such systems of supervision, control, and inspection of its employees and their accounts and of the several departments and subdepartments that misappropriation or embezzlement of public moneys can not escape detection, and so far as means can be devised, will be prevented.

MATERIAL, SUPPLIES, AND MACHINERY.

It was found by the Commission, soon after its appointment, that the rapid development of the work and the possession of material acquired by purchase from the French, made necessary the organization of a department of material and supplies. Therefore the Commission, on August 31, then being on the Isthmus, adopted the following resolution:

Resolved, That there shall be on the Isthmus a separate division of the canal organization, known as the material and supplies department, and a head thereof known as the chief of the material and supplies department, who shall report to and be directly responsible to the Isthmian Canal Commission.

The chief of the material and supplies department shall be charged with the receipt, inspection on the Isthmus, custody, care, shipment, transfer, issue, and disposition of all supplies, material, equipage, and floating equipment unissued and not in actual use.

The chief of the material and supplies department shall be charged with a rigid responsibility for the care, protection, and issue of supplies and equipage, and shall store, guard, and protect the same in every way in his power from deterioration and loss. He shall use due diligence in determining the best use to which materials on hand can be put, and shall suggest substitution of such material of cheaper or lower grade when the same can be used to advantage, and in no case shall he issue construction material of recent purchase where supplies on hand and acquired from the Panama Canal Company can, in the opinion of the chief engineer, be used economically.

The governor of the Canal Zone, acting for the executive branch of the government of the Zone, and the chief engineer, acting for the department of engineering and construction, shall have authority to decide on the suitability of any and all supplies furnished, and their requisitions for such materials as are on the Isthmus shall be promptly filled without reference to a higher authority.

The chief of the material and supplies department shall not issue property of any nature without requisition from the department requiring it, nor shall he cause to be purchased, manufactured, or procured in any manner any commodity without the advice and consent of the department for which it is required. He shall afford every facility to the heads of departments to examine material and supplies on hand and to procure information respecting the cost, stock on hand, time of delivery, status of requisition, and similar matters.

The chief of the material and supplies department shall, on or before July 31 of each year, render an annual report to the Commission, brought down to June 30 of said year, and also such special reports as may be called for.

Mr. E. C. Tobey, paymaster, U. S. Navy, who had, up to this time, served as disbursing officer, was appointed chief of this department.

It is now proposed to extend the scope of this department to include a commissary, the service of which shall be limited to the American employees, of whom there are now about 600 on the Isthmus. This number will be largely increased at such time as the general execution of the work is commenced.

While it is not desired to interfere with the local trade in food and other personal supplies, these men can be, with justice, considered as in a position similar to our troops stationed at remote posts, or in our insular possessions—for instance, the battalion of marines now at Emperador—and as entitled to such facilities, comforts, and protection, at reasonable rates, as the Government properly affords to its Army and Navy while on foreign duty.

Connected with the work of this department was the appointment of a board of inventory and appraisal of the material, machinery, and other movable property acquired from the New Panama Canal Company and now on the Isthmus of Panama. The three members of this board were, respectively, appointed by the Commission, the chief engineer, and the chief of the department of material and supplies, and its conclusions are subject to revision by these heads of department. The work of this board is of extreme difficulty, as the subject of the inventory and appraisal is of the most varied character, is in all conditions from worthless to good, and is scattered throughout many storehouses and 50 square miles of jungle. As soon as this survey and inventory is completed it is intended to collect in storehouses, classify, and protect from further deterioration all articles for which a future use can be discovered. The following list of the more important articles is abstracted from the books of the New Panama Canal Company:

	Meters.
Railroad track:	
Track in place	168,612.40
Rails in store	115,096.10
Total	[a]283,708.50
Decauville track:	
Track in place	6,473.80
Track in store	99,224.16
Total	[b]105,697.96

[a] Equals 176.2 miles. [b] Equals 65.6 miles.

Items.	Quantity.	Book value.
		Francs.
Floating apparatus for drilling	1	182,887.50
Suction dredge	2	33,700.00
Boring apparatus	7	54,600.00
Armatures for shaft	730	74,356.75
Hand clapets	22	1,085,700.00
Steam clapets	14	4,010,580.00
Cistern boats	2	234,360.00
Pump barges	3	189,216.00
Engines for concrete construction	10	73,350.00
Miscellaneous yawls	38	73,950.00
Steamboat "Abeille"	1	9,000.00
Miscellaneous barges	57	1,312,247.00
Steam launches	21	825,991.00
Framing for locks	kilos.. 3,321,831	2,178,611.66
Framing for locks	do.... 1,377,780	1,444,669.00
Centerings for tunnel	300	108,558.15
Diving bell	1	47,545.95
Bruising mills	20	138,712.50
Pipes in place for water supply	meters.. 30,953.50	222,865.20
Miscellaneous dredges	29	14,347,558.50
Hunt elevator	1	35,578.28
Excavator dredges	2	389,352.00
Excavators	86	7,010,707.50
Cast iron for locks	kilos.. 11,430,851	6,543,469.59
Miscellaneous cranes	273	6,416,571.00
Hand cars	5	4,650.00
Miscellaneous locomobiles	153	3,099,552.00
Franco-Belgian locomotives	212	11,092,695.00
Decauville locomotives	14	204,000.00
American locomotives	34	1,932,970.88
Locomotives with winch	2	52,500.00
Lorys	10	4,620.00
Flat barges	10	34,702.50
Motors	10	36,400.00
Miscellaneous rock drills	189	560,163.72
Turntables for track	7	52,500.00
Turntables for Decauville track	129	24,671.25
Miscellaneous pumps	800	1,582,277.11
Bridges	12	3,938,510.82
Pontoons	4	1,116,991.50
Push cars	53	24,496.00
Steam tugs	9	1,212,471.00
Seismographs	2	4,092.00
Suction dredges	5	260,250.00
Earth-dug transporters	6	824,274.00
Hand winches	262	85,492.20
Steam winches	140	1,452,117.06
Decauville track in place	meters.. 6,473.80	75,260.90
Track in place	do.... 168,612.40	411,385.30
Dump cars, 6.3 meters	3,905	13,215,984.35
Dump cars, 4.3 meters	658	1,237,582.40
Dump cars, 3.3 meters	8	9,600.00
Cistern cars	18	45,252.00
Tramway cars	4	2,700.00
Trolleys	4,660	1,476,288.00
Decauville track in store	meters. 99,224.16	.....
Railroad-track rails in store	do.... 230,192.25	.....
Lidgerwood cables	7	224,000.00
Teste and Pichat cables	4	200,000.00
Bridge Bache	1	2,123,250.00
Metallic bridge	1	.....
Sharpening machines	4	3,030.00
Bending machines	17	20,832.20
Electrical machines	10	71,469.17
Shaping machines	2	2,138.61
Mortising machines	5	27,150.00
Planing machines	12	67,219.00
Punching machines	151	171,480.00
Shearing machines	129	169,674.00
Riveting machines	3	14,250.00
Bolt-screwing machines	23	39,592.50
Miscellaneous machines (cut paper, grind paints)	17	30,774.45
Slide lathes	29	149,755.00
Miscellaneous turning lathes	41	161,309.10
Cupolas	6	14,910.00
Total	.....	98,379,841.60

Value of French franc, 19$\frac{3}{10}$ cents; 98,379,841.60 francs = $18,987,309.43.

The total value of the property as entered in these books is about $29,000,000, but it must be understood that this is merely a book value, of which only a small part can be realized by the Commission under the most careful management.

It is satisfactory to report that more of this material than was expected is either in serviceable condition or can be made so by reasonable repairs. The machine shops at Bas Matachin, while not equipped with modern tools, were found in good condition, and are now rendering excellent service in making these repairs. Much of the other materials and equipment, although not abreast with modern invention, can be made more or less useful. For instance, there are about 143 miles of 56-pound rail and a large amount of Decauville track and rolling stock. Probably upward of two-thirds of the 4,000 dump cars on the list can be repaired and remodeled so as to be put to good use. The same is true of many of the locomotives and much of the floating equipment. The locomotives, which are of both American and Belgian build, are light and antiquated, but still available. Of the dredges and derrick boats several have sunk from age and neglect, but of those still afloat the machinery and upper works are fairly good, but in jeopardy from the rotten condition of the hulls, the repair or rebuilding of which is a subject of emergency.

As soon as the Commission was appointed, and before the organization of its several departments was practicable, urgent demands arose for supplies of various kinds. Under this condition it was necessary that some considerable purchases should be made in open market, or by the invitation of propositions from well-known dealers in various parts of the country. Great care was taken, in the issue of these invitations, to avoid partiality to individuals or to localities, and in all cases the freest practicable competition was sought. Although this is a method of purchase recognized and approved by the Government as conducive to its interest in cases of emergency, and although the instances in which it was used by the Commission were, in its opinion, those for which it was intended by the Government, yet the Commission at all times had the intention of resorting to the method of public advertisement as soon as practicable and to the greatest extent possible. Therefore, at its meeting of August 18, while the Commission was on the Isthmus and engaged in the organization of its various departments, it was resolved:

> That hereafter, so far as practicable, all purchases of machinery, material, and supplies shall be made after due advertisment and competition.

This policy has since controlled the Commission in all its purchases, except those of an extremely small amount or those similar to anæsthetics or disinfectants urgently needed at the hospitals. Even those will be discontinued as soon as the experience of the heads of departments enables them to more fully foresee all of their needs.

PANAMA RAILROAD.

Part of the property sold to the United States Government by the Canal Company was 68,887 shares of the capital stock of the Panama Railroad Company. As the total number of shares was 70,000, the Government acquired an interest amounting to 98⅓ per cent of the whole.

The Panama Railroad has had a long and eventful history. As early as 1848 the Republic of New Granada granted to W. H. Aspinwall, John Lloyd Stephens, Henry Chauncy, and associates, the exclusive privilege of establishing a railroad between the two oceans across the Isthmus, and agreed that during the continuance of this exclusive privilege the Government of New Granada would neither construct nor permit others to construct a maritime canal without the consent of the railroad company. In the following year the legislature of the State of New York by a special act incorporated the Panama Railroad Company, with full powers to construct the railroad contemplated by the concession of the Republic of Granada, and to purchase and navigate such vessels as might be proper to use in connection with the said railroad. The Panama Railroad Company has continuously existed and exercised its rights under that act, and one amendatory thereof passed in 1855, fixing the amount of the capitol stock. In 1850 the Government of New Granada and the Panama Railroad Company entered into a contract covering the operation of the road, the construction of which was at once undertaken and completed before 1855.

The Government of New Granada having given place to the Republic of Colombia, the latter, in 1867, gave a new concession to the Panama Railroad Company. In the case of similar concessions it has been usual for the grantor country to aid by subsidy or guarantee the grantee company. The Panama Railroad Company on the other hand, except by the receipt of certain lands along the route, instead of receiving aid has been compelled to pay to Colombia $250,000 annually, and "to transport free of charge the troops, chiefs, and officers, and their equipage, ammunition, armament, clothing, and all similar effects that may belong to, are or may be destined for the immediate service of the Government of the Republic or of the State of Panama, as also their officials in service or in commission, and those individuals who, with their families and baggage, may come to the country in the character of emigrants, and of new settlers with the permanent character of such for account of the Government, up to the number of 2,000 annually."

When the property purchased from the Canal Company was turned over to the United States the railroad consisted of 47.65 miles of single track between Colon and Panama. In addition to which and including the yards at Colon, Panama, and La Boca there were 26.07 miles of sidings. The general condition of the roadway and buildings is fair. The railroad equipment consisted of:

Locomotives:	
Road	24
Switch	11
Passenger cars:	
Special	5
First class	8
Composite, first and second class	2
Second class	9
Baggage	7
Freight cars:	
Box	584
Coal	173
Flat	151
Miscellaneous:	
Local express	22
Wrecking	1

Miscellaneous—Continued.	
Caboose	5
Specie	2
Water	9
Stock	9
Road department	11
Steam pile driver	1

Nearly all this equipment is old, and consequently its condition is poor, considerable repairs being needed. Of the locomotives 11 were in good condition, 3 in service needing light repairs, 13 in service needing general repairs, 5 out of service undergoing general repairs, and 3 condemned. Of the cars 5 passenger, 2 baggage, 30 box, 50 coal, and 40 flat required general repairs. The company owns fairly well-fitted and equipped shops for the repairs of its equipment. These are located at Colon.

Of floating equipment the company owned three steamships:

Name.	Built.	Gross tonnage.	Length.	Breadth.
			Feet.	*Feet.*
Alliance	1886	2,985	303	42.0
Advance	1883	2,604	295	38.4
Finance	1883	2,603	300	38.4

These ships were all built by the Delaware River Iron Shipbuilding and Engine Works, of Chester, Pa. Previous to the sale of the railroad the last two ships were withdrawn from the route for extensive repairs, which were completed during the past summer, when the vessels resumed running. In the work of repairs the ships were given new boilers, masts, decks, cabins, keels, and plates wherever necessary in order to secure a rating of A 1 until 1908. The repairs cost, for the *Advance*, $183,529.17, and for the *Finance*, $187,347.95.

During the time these two steamers were withdrawn from service the company maintained the line by chartering the *City of Washington*, the *Yucatan*, and the *Seguranca*. On the return of the *Finance* and the *Advance*, the *City of Washington* and the *Seguranca* were returned to the owner, the *Yucatan* being kept in service, as four ships are required to equip the route. In November the *Finance* lost her rudder, necessitating her withdrawal from the line for several weeks for repairs. This deficiency has been made good by a temporary rechartering of the *City of Washington*. This steamer, while waiting to be docked, has since been further damaged by fire.

In addition to the right of way and ordinary equipment of the road the railroad company owns the island of Manzanillo, upon which the city of Colon is situated, containing approximately 700 acres, except 4 hectares reserved for the use of the Colombian Government, the wharf of the Royal Mail Steam Packet Company, and that of the Pacific Mail Steamship Company.

At Colon it has offices, residences, stations, freight houses, wharves, hotels, church buildings, shops, and buildings rented to employees. The number of buildings belonging to the company is about 70. A large part of the land which is not needed by the company at Colon is leased to tenants upon one, five, and ten year terms.

At Panama the company owns its station, two wharves, roundhouses, shops, and several large parcels of land within the limits of

the city proper. The number of buildings belonging to the company is about 26.

At La Boca the company owns one wharf, and has secured from the Old Panama Canal Company a lease in perpetuity, at an annual rental, of the lands necessary for the branch line running from La Boca to Panama, and for its terminal requirements up to and at La Boca, as well as all of the buildings and materials thereon necessary for the operation of the terminal.

The above wharf was constructed partly out of moneys advanced by the Panama Canal Company and partly out of funds produced by the sale of Panama railroad bonds, and out of the revenues of that company. The pier was completed in 1900, but subsequently some additional work, chiefly in the way of installing plant, was done. The total cost of pier and plant was $2,206,637.13. The number of buildings owned by the company is about 6.

In Panama Bay the company owns by purchase an undivided half interest in the islands of Naos, Culebra, Perico, and Flamenco with the Pacific Mail Steamship Company.

Along the line of road the company owns large parcels of property, part of which is at the present time leased to outside parties. The station and other buildings owned by the company are in number about 38.

The results of the operation of the Panama Railroad have fluctuated between quite wide limits, owing to variations in existing traffic contracts and the condition of construction of work along the canal.

The fiscal year of the company ends December 31. The results of each year during the last ten years, including eight months of the present fiscal year—that is, up to and including August 31—are as follows:

Statement of gross receipts, operating expenses, fixed charges, dividends, etc., of Panama Railroad Company for the years 1895 to 1904, inclusive.

	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904 (8 months).
Gross receipts:										
Railroad	$1,706,440.64	$1,548,936.68	$1,630,218.26	$1,522,697.23	$1,432,571.88	$1,673,182.42	$1,864,035.37	$1,697,381.27	$1,743,636.36	$1,320,994.67
Steamers	733,602.54	722,204.83	670,486.99	620,183.94	762,470.08	982,062.29	1,332,673.60	1,065,434.36	920,414.93	746,913.47
	2,440,043.18	2,271,141.51	2,300,705.25	2,142,881.17	2,195,041.96	2,655,194.71	3,196,708.97	2,762,815.63	2,664,051.29	2,067,908.14
Operating expenses:										
Railroad	819,819.28	739,172.02	823,096.46	791,720.21	777,653.00	888,327.33	964,259.17	919,803.70	886,482.75	686,090.20
Steamers	1,067,360.95	496,665.86	583,136.62	599,172.98	641,742.19	844,176.45	1,476,048.07	1,042,312.07	873,855.24	637,864.10
	1,887,180.23	1,235,837.88	1,406,233.08	1,390,893.19	1,419,395.19	1,732,503.78	2,440,307.24	1,962,115.77	1,760,337.99	1,323,954.30
Earnings over expenses	552,862.95	1,035,303.63	894,472.17	751,987.98	775,646.77	922,690.93	756,401.73	800,699.86	903,713.30	743,953.84
FIXED CHARGES.										
Subsidy to Colombia	250,000.00	250,000.00	250,000.00	250,000.00	250,000.00	250,000.00	250,000.00	250,000.00	250,000.00	166,666.66
Sinking fund—First-mortgage Bonds			25,728.38	150,000.00	150,000.00	150,000.00	150,000.00	150,000.00	150,000.00	100,000.00
Interest on first-mortgage bonds	239,619.10	239,619.10	208,870.42	85,241.25	80,415.00	75,926.25	70,200.00	99,882.50	102,645.00	67,678.12
La Boca wharf contractors							26,611.61	5,432.96		
	489,619.10	489,619.10	484,598.80	485,241.25	480,415.00	475,926.25	496,811.61	505,315.46	502,645.00	334,344.78
Net income per page 9 of annual reports	62,943.85	545,684.53	409,873.37	266,746.73	295,231.77	446,764.68	259,590.12	295,384.40	401,068.30	409,609.06
Less revenue charges to profit and loss account	2,174.49			61,207.86	15,572.16	15,572.16	18,086.81	4,142.31		
Add revenue credits to profit and loss account		12,204.08	35,177.78						8,734.52	
Surplus earnings	60,769.36	557,888.61	445,051.15	205,538.87	279,659.61	431,192.52	241,503.31	291,242.09	409,802.82	409,609.06
Dividends paid	None.	None.	None.	None.	None.	None.	140,000.00	280,000.00	560,000.00	175,000.00
Dividend rate							*Per cent.* 2	*Per cent.* 4	*Per cent.* 8	*Per cent.* 2½

There was no special balance sheet of the company prepared at the time of its taking over, the last previous balance sheet being that taken when the books of the company were closed at the end of the fiscal year, namely, December 31, 1903. This balance sheet, as shown by the reports of the company, is in full as follows:

TABLE A.—*Balance sheet, December 31, 1903.*

DR.		
Cost of road, real estate, and equipment New terminal at La Boca		$12,045,258.32
Floating equipment:		
Steamers Allianca, Finance, and Advance, reduced value December 31, 1902	$267,419.27	
Tugs and lighters, reduced value December 31, 1902 ... $318,137.53		
Deduct depreciation fund for tugs ... 2,100.00	316,037.53	
		583,456.80
Total		12,628,715.12
Bonds in Treasury:		
One hundred and fifty-three 6 per cent Panama Railroad Company sinking fund subsidy bonds	153,000.00	
Nine hundred and thirty-five 4½ per cent twenty-year gold sinking fund bonds	936,037.50	
		1,089,037.50
On deposit with financial agents for redemption of bonds: 6 per cent subsidy bonds		10,000.00
Advance of subsidy to Republic of Colombia		887,000.00
Improvement and construction accounts		55,570.50
Fund for replacement of boilers and special repairs to steamers and tugs		34,002.59
Current assets:		
Cash in banks and with agents	469,994.66	
Coal and supplies on hand	176,412.86	
Due from connecting companies	108,060.58	
Due from United States Government	24,437.16	
Due from Republic of Colombia	4,999.93	
Due from companies and individuals	48,078.50	
Accrued interest on deposits	13,682.96	
Accrued interest on securities owned	1,777.50	
Unadjusted accounts	12,513.33	
Prepaid insurance and charter of steamers	17,595.93	
		877,553.41
Total		15,581,879.12
CR.		
Capital stock		7,000,000.00
4½ per cent twenty-year sinking fund gold bonds (authorized issue, $4,000,000):		
Issued to date (4,000 bonds, less 701 bonds previously redeemed)	3,299,000.00	
Less drawn for redemption in 1903	140,000.00	
		3,159,000.00
Total capital stock and mortgage liabilities		10,159,000.00
6 per cent gold fund subsidy bonds		887,000.00
Bonds drawn for redemption not presented for payment: 6 per cent subsidy bonds		10,000.00
Accrued interest on bonds:		
4½ per cent twenty-year gold bonds (2,246 bonds)	25,267.50	
6 per cent subsidy bonds	8,870.00	
		34,137.50
Funds for redemption of bonds:		
4½ per cent twenty-year gold bonds	62,946.78	
6 per cent subsidy bonds	76,005.00	
		138,951.78
Due Republic of Panama		21,875.00
Allowance to cover excess interest over contract rate on 4½ per cent bonds sold to prepay indebtedness due contractors, new terminal at La Boca, on October 15, 1905		26,061.95
Current liabilities:		
Isthmus drafts not presented	11,100.95	
Coupons not presented	1,562.50	
Audited vouchers	97,941.51	
Unclaimed dividends	119.00	
Due deceased or missing employees	2,199.02	
		112,922.98
Balance to credit of profit and loss		4,191,929.91
Total		15,581,879.12

Eight hundred and eighty-seven 6 per cent gold sinking fund subsidy bonds of $1,000 each, amounting to $887,000, issued November 1, 1880, fall due November 1, 1910.

To meet this bonded indebtedness, $225,000 annually of the Colombian Government subsidy was pledged till March 27, 1908, the same to be applied by the company, first, to the payment of the interest, and second, as a cumulative sinking fund for the redemption of the principal, the bonds to be drawn yearly in September to an amount equal to the then surplus of the subsidy sinking fund, the drawn bonds to be paid on November 1 after each drawing, and thereby redeeming the whole issue in 1908.

S. DEMING, *Treasurer.*

TABLE B.—*Profit and loss account, December 31, 1903.*

DR.	
To one hundred and sixteenth dividend	$140,000.00
one hundred and seventeenth dividend	140,000.00
one hundred and eighteenth dividend	280,000.00
operating expenses	1,746,852.97
appropriations for depreciation of tugs and special repairs of steamers and tugs	13,650.00
fixed charges	502,645.00
uncollectible accounts, etc., written off	29.85
balance, assets over liabilities, December 31, 1903	4,191,929.91
Total	7,015,107.73
CR.	
By balance December 31, 1902	4,201,587.09
gross earnings	2,664,216.27
4½ per cent twenty-year sinking fund gold bonds redeemed	140,000.00
adjustment of accounts of previous years	8,761.37
value of fittings taken from dismantled lighters, etc	540.00
Total	7,015,107.73

In the above balance sheet there will be noticed the items "Advance of subsidy to Republic of Colombia," and the withdrawal of certain 6 per cent subsidy bonds. These items arise from the fact that one of the obligations devolving upon the Panama Railroad Company by its contract of concession with the Republic of Colombia was the annual payment of $250,000, $25,000 of which was made directly to the Department of Panama. To cover the payment in advance of the subsidy due the Republic of Colombia up to the year 1908, the company issued 3,000 sinking fund 6 per cent subsidy bonds, and each year applies $225,000 to the payment of interest on the outstanding bonds and the balance to the redemption of the bonds themselves.

On December 31, 1903, 2,113 had been redeemed by the provisions of the sinking fund, 153 had been purchased by the company and were held in its treasury, and 734 were in the hands of the public.

During the year 1904 the annual appropriation of $225,000 was devoted to the payment of interest on outstanding bonds and to the redemption of 172 bonds; of that number 27 were among those belonging to the company's treasury.

Therefore, at this time the status is: 2,285 redeemed by provisions of sinking fund, 126 held by the company's treasury, and 589 held by the public.

All of these bonds outstanding will be redeemed by the provisions of the sinking fund in the year 1908.

The company also has a first mortgage bond issue, bearing interest at 4½ per cent. On December 31, 1904, the status was as follows:

Redeemed by annual sinking-fund drawings ($150,000)	841
Held by the public	2,224
Held by the company's treasury	935

During the year 1904 the trustees of the mortgage called for redemption 140 bonds, to be paid for out of the annual appropriation of $150,000, provided for by the indenture of mortgage; and the company issued 265 bonds to the public to pay for repairs to the *Advance* and *Finance*. These bonds were sold as required by a contract made in October, 1903. The balance of the money was taken for a "reserved fund of depreciation of steamers," amounting to $102,750. Therefore, at the present time, the status is:

Redeemed by annual sinking-fund drawings ($150,000)	981
Held by the public	2,372
Held by the company's treasury	947
Total issue	4,000

During the year the Canal Commission out of its own funds has purchased 100 additional shares of capital stock at par, thus making the total Government holdings 68,987 shares, leaving but 1,013 outstanding in the hands of private individuals in this country and abroad. This is such a small amount of stock the Commission feels that the Government should own the whole capital, and the Commission stands ready therefore to purchase any further shares that may be offered at par. In view of the average dividends that have been paid since 1900 and of the certainty that the business of the company will much diminish on the completion of the canal, the price of par is certainly liberal. The small number of shares involved, however, justify the liberal offer in order that they may be acquired.

It is too early yet to make any recommendations in regard to the policy to be followed in the future management of this company. During the construction of the canal the railroad will necessarily be a large and valuable adjunct, but on the completion of the canal it will become merely a local line between the cities of Colon and Panama.

Pending the adoption of a general policy for the management of the company, the Commission has turned its attention to the question of local rates on the Isthmus which it is expected will soon be revised. Partly on account of the vast amount of free transportation furnished under the agreement with the Republic of Panama, as given above, the railroad company has been obliged to charge high local rates for both passengers and freight. As an indication of the abuse to which this free transportation has been carried, during the year 1903 there were 4,633 first-class paying passengers and 11,098 passengers and 6,601 troops carried free. Steps have been taken looking to a reduction of this free transportation abuse to proper and reasonable limits.

With the activity that is certain to prevail on the Isthmus during the construction of the canal, it is obvious that the present steamship equipment will be inadequate to meet the demands of passenger and freight traffic. The directors of the company have ordered plans prepared for new and additional steamers, but under the direction of the Commission no action has yet been taken looking to their construction. This whole question of the development of the company's property is now being considered by the Commission, but no conclusion can be arrived at until a decision has been reached in regard to the proper method of constructing the canal, to which the railroad is necessarily subservient.

The management of the railroad company is vested, according to the charter, in 13 directors; 7 of these directors have resigned and

their places have been filled by the election of the members of the Canal Commission, and these now constitute a majority of the board. The present constitution of the board is as follows: Edward A. Drake, J. Edward Simmons, Samuel M. Felton, J. H. Parker, William Nelson Cromwell, Vernon H. Brown, John G. Walker, William H. Burr, C. Ewald Grunsky, William Barclay Parsons, G. W. Davis, B. M. Harrod, one vacancy (Canal Commissioner).

GOVERNMENT OF THE CANAL ZONE.

The act of Congress approved April 28, 1904, provided as follows:

That until the expiration of the Fifty-eighth Congress, unless provision for the temporary government of the territory acquired by the United States from the Republic of Panama by the terms of the treaty ratified on the twenty-sixth day of February, nineteen hundred and four, be sooner made by Congress, all the military, civil, and judicial powers exercised by the officers of the existing government of the said territory or granted by the terms of said treaty to the United States, shall be vested in such person or persons, and shall be exercised in such manner, as the President of the United States shall direct for the government of said territory, and maintaining and protecting the inhabitants thereof in the free enjoyment of their liberty, property, and religion.

The letter of the President placing the Isthmian Canal Commission under the supervision and direction of the Secretary of War and defining the jurisdiction and functions of the Commission contains the following:

I direct that all the work of the Commission done by virtue of powers vested in me by the act of Congress approved June 28, 1902, in the digging, construction, and completion of the canal, and all the governmental power in and over said Canal Zone and its appurtenant territory, which by virtue of the act of Congress approved April 28, 1904, and these instructions shall be vested in said Isthmian Canal Commission, shall be carried on or exercised under your supervision and direction as Secretary of War.

Subject to the limitations of law and the conditions herein contained the Isthmian Canal Commission are authorized and directed:

1. To make all needful rules and regulations for the government of the zone and for the correct administration of the military, civil, and judicial affairs of its possessions until the close of the Fifty-eighth Congress.

* * * * * * *

The laws of the land, with which the inhabitants are familiar and which were in force on February 26, 1904, will continue in force in the Canal Zone and in other places on the Isthmus over which the United States has jurisdiction until altered or annulled by the said Commission, but there are certain great principles of government which have been made the basis of an existence as a nation which we deem essential to the rule of law and the maintenance of order, and which shall have force in said zone. The principles referred to may be generally stated as follows:

That no person shall be deprived of life, liberty, or property without due process of law; that private property shall not be taken for public use without just compensation; that in all criminal prosecutions the accused shall enjoy the right of a speedy and public trial, to be informed of the nature and cause of the accusation, to be confronted with the witnesses against him, to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense; that excessive bail shall not be required nor excessive fines imposed, nor cruel or unusual punishment inflicted; that no person shall be put twice in jeopardy for the same offense, or be compelled in any criminal case to be a witness against himself; that the right to be secure against unreasonable searches and seizures shall not be violated; that neither slavery nor involuntary servitude shall exist except as a punishment for crime; that no bill of attainder or ex post facto law shall be passed; that no law shall be passed abridging the freedom of speech or of the press or of the rights of the people to peaceably assemble and petition the government for a redress of grievances; that no law shall be made respecting the establishment of religion or prohibiting the free exercise thereof: *Provided, however*, That the Commission shall have power to exclude from time to time from the Canal Zone and other places on the Isthmus,

over which the United States has jurisdiction, persons of the following classes who were not actually domiciled within the Zone on the 26th day of February, 1904, viz: Idiots, the insane, epileptics, paupers, criminals, professional beggars, persons afflicted with loathsome or dangerous contagious diseases; those who have been convicted of felony, anarchists, those whose purpose is to incite insurrection, and others whose presence it is believed by the Commission would tend to create puplic disorder, endanger the public health, or in any manner impede the prosecution of the work of opening the canal; and may cause any and all such newly-arrived persons or those alien to the Zone to be expelled and deported from the territory controlled by the United States and the Commission may defray from the canal appropriation the cost of such deportation as necessary expenses of the sanitation, the police protection of the canal route, and the preservation of good order among the inhabitants.

The Commission may legislate on all rightful subjects of legislation not inconsistent with the laws and treaties of the United States so far as they apply to said Zone and other places, and the said power shall include the enactment of the sanitary ordinances of a preventive or curative character to be enforced in the cities of Colon and Panama and which are contemplated and authorized by article 7 of said Canal Convention. Such legislative power shall also include the power to raise and appropriate revenues in said Zone; and all taxes, judicial fines, customs duties, and other revenues levied and collected in said Zone by or under the authority of said Commission shall be retained, accounted for, and disbursed by said Commission for its proper purposes. The members of said Commission to the number of four or more shall constitute a legislative quorum, and all rules and regulations passed and enacted by said Commission shall have set forth as a caption that they are enacted by the Isthmian Canal Commission, "By authority of the President of the United States."

The Commission shall hold its regular quarterly meetings at the office of the Commission, either in Panama or at a branch office in Washington, and special meetings may be held at the pleasure of the Commission.

All laws, rules, and regulations of a governmental character enacted by the Commission hereunder shall be submitted to you for your approval, and should your approval be withheld from any such law, rule, or regulation, then from that time the law, rule, or regulation shall thereafter have no force or effect.

The foregoing admonition required the Commission to establish within the Canal Zone sufficient guaranties for the maintenance of the privileges guaranteed by the bill of rights. Experience has demonstrated that the most effective of such guaranties is a civil government within which the three branches of government are separate and distinct; with this fact in mind the Commission, by appropriate legislation, provided a government for the Canal Zone divided into three branches, to wit, legislative, judicial, and executive.

LEGISLATIVE BRANCH.

The powers of the legislative branch of government are exercised by the Isthmian Canal Commission, pursuant to the order of the President vesting that body with legislative authority.

JUDICIAL BRANCH.

The powers of the judicial branch (Act No. 1) are exercised by a supreme court, three circuit courts, and five municipal courts.

The supreme court is composed of three justices. Each of the three circuit courts is presided over by a justice of the supreme court sitting as a trial judge. Each of the five municipal courts is presided over by a municipal judge.

The judges are paid salaries. The salaries of the justices of the supreme court are paid from the Zone treasury; the salaries of the municipal judges are paid from the municipal treasuries.

The supreme court and each circuit court has a marshal and a clerk. A law was enacted (No. 13) authorizing the captain of the Zone police

force to exercise the powers and perform the duties of the marshal of the supreme court and the marshals of the circuit courts until those positions are duly filled by permanent incumbents.

Either justice of the supreme court may sit as the judge of any or all of the circuit courts. One justice of the supreme court has been appointed and has entered upon the discharge of his duties. Under the provisions of Act No. 1 he is authorized to hold court in each of the three judicial circuits into which the Zone is divided. Terms of court have already been held in each of said three circuits and numerous cases heard and determined. It will be seen that the plan adopted by the Commission attempts to reduce the expenses of the judicial branch to a minimum and at the same time provide for such development as may reasonably be expected. Probably for a time the supreme court and the circuit courts will have little to do except in criminal matters, but the influx of a large number of people and the varied interests of contractors, employees, and camp followers is quite certain to induce litigation.

The Commission consider that the organization of the judicial branch would be incomplete unless provision was made for the exercise of the right of appeal from the judgment of the trial court. Each of the measures introduced in the last Congress providing for the establishment of government in the Canal Zone contain such provisions; several such measures provided that appeals from trial courts in the Zone should be had to some one of the Federal courts of the United States. None of these provisions were enacted by Congress. The Commission is without authority to confer a new jurisdiction upon a Federal court of the United States. The Commission could not, therefore, do otherwise than to make provision for a Canal Zone supreme court. It is not, however, necessary that the supreme court should be organized until litigation in the Canal Zone requires it; but necessity arising, the judgeships, temporarily vacant, can be filled and appeals considered.

Should it be determined by Congress that appeals from the local courts should be taken to a court sitting in the United States, whereby at some inconvenience to litigants there would be a saving of the salaries of two judges and of a number of minor court officials, the Canal-Zone law can be modified. It appears desirable to the Commission that this matter be settled at an early date, before the organization of the supreme court on the Zone, and the appointment of additional judges becomes imperative.

EXECUTIVE BRANCH.

The executive branch, as organized by act No. 8, enactments of the Isthmian Canal Commission, consists of the following offices: Governor, executive secretary, treasurer, and auditor.

There are also the following departments of the executive branch:

Department of health, composed of the sanitary service, hospital service, maritime-quarantine service, health officer for the city of Panama, and health officer for the city of Colon.

Department of revenues, composed of the customs service, internal revenue service, and postal service.

Department of justice, composed of a prosecuting attorney and not to exceed three deputies.

Department of police was originally composed of 1 captain, 2 clerks, 2 lieutenants, 4 sergeants, and 69 privates. This organization

was subsequently somewhat modified, and it is anticipated that within the next year the police force will require some augmentation.

Bureau of education, charged with matters relating to schools and public instruction, the affairs of which bureau have been placed in the hands of the governor with power to act.

The governor has been appointed by the President from the membership of the Commission.

The duties of the treasurer of the Zone are being performed by the disbursing officer of the Commission stationed in the Zone.

The auditor for the Commission is the auditor for the Zone government and the service is performed by the office force of that official.

MUNICIPALITIES.

The Zone has been divided into five municipalities:

(Act No. 7) Ancon, Emperador, Gorgona, Buenavista, and Cristobal. The affairs of each municipality are to be administered by a mayor, secretary, treasurer, municipal judge, and council of six. The attempt has been made to make the municipalities autonomous and self-supporting. They are given the power to impose land taxes not to exceed 1 per cent of valuation (one-half of which tax must be devoted to school purposes), and license or privilege tax on numerous occupations.

The mayor, treasurer, secretary, and membership of the council are salaried officers. The incumbents are appointed by the governor of the Zone. The municipal ordinances are subject to the approval of the governor.

The municipal act went into effect November 1, 1904, and the municipalities are now organized thereunder.

The organization above outlined is believed to be adequate for existing requirements. It is as economical as conditions permit, and may be expanded as occasion shall arise.

LEGISLATIVE ENACTMENTS.

The Commission have enacted the following:

No. 1.—An act to provide for the organization of a judiciary and the exercise of judicial powers in the Canal Zone, Isthmus of Panama, and for other purposes.

No. 2.—An act authorizing the appointment of notaries public, defining their duties, fixing their terms of office, prescribing their fees, and for other purposes.

No. 3.—An act reciting an Executive order of the President of the United States, and to provide for the suppression of lotteries and similar enterprises in the Canal Zone, Isthmus of Panama, and for other purposes.

No. 4.—An act to prohibit gambling in the Canal Zone, Isthmus of Panama, and to provide for the punishment of violations thereof, and for other purposes.

No. 5.—An act to authorize the alcaldes of the several municipalities of the Canal Zone, Isthmus of Panama, temporarily to continue to exercise the judicial powers and jurisdiction heretofore exercised by them.

No. 6.—An act authorizing the exercise of the right of expropriation within the Canal Zone, Isthmus of Panama, as to real estate and immovable property, and as to property that is partly personal and partly real, and providing the method of procedure for exercising that right.

No. 7.—An act to provide for the organization of municipal governments in the Canal Zone, Isthmus of Panama.

No. 8.—An act to provide for the organization of the executive branch of the government of the Canal Zone, Isthmus of Panama.

No. 9.—An act to provide sanitary rules and regulations for the Canal Zone, Isthmus of Panama.

No. 10.—An act to provide maritime quarantine regulations for the ports and harbors of the Canal Zone, Isthmus of Panama.

No. 11.—An act designating the days which shall be observed as public holidays in the Canal Zone, Isthmus of Panama.

No. 12.—An act creating a penitentiary for the Canal Zone, Isthmus of Panama.

No. 13.—An act to provide for the temporary performance of the duties of the marshal of the supreme court, marshals of the circuit courts, clerk of the supreme court, and clerks of the circuit courts of the Canal Zone, Isthmus of Panama.

No. 14.—An act to establish a Penal Code for the Canal Zone, Isthmus of Panama.

No. 15.—An act to establish a Code of Criminal Procedure for the Canal Zone, Isthmus of Panama.

No. 16.—An act prescribing a method of determining the salaries of army and navy officers and of officers of the United States Public Health and Marine-Hospital Service employed by the Isthmian Canal Commission and stationed on the Isthmus of Panama.

Acts Nos. 17, 18, 19, and 20 are amendatory of prior acts.

The foregoing acts have been printed and a copy of said publication is transmitted herewith.

These laws have been enacted with sincere desire to exhibit fidelity to the principles upon which our Government is based, and to promote the welfare of the people and territory subject to their jurisdiction.

In addition to the foregoing, the Commission adopted for recommendation to the proper authorities of the Republic of Panama for such legislation as may be necessary, the following: 1, sanitary rules and regulations for the cities of Panama and Colon; 2, maritime quarantine regulations for the harbors at Panama and Colon.

The rules and regulations so recommended by the Commission have been adopted by the Republic of Panama and are now in force.

Proper provision for the sanitation, quarantine, and other measures for preventing the introduction or spread of diseases within the Zone or Isthmus, is of such paramount importance that especial investigation was made and care taken in formulating the laws, rules, and regulations adopted with reference to that subject, and in providing the agencies by which they were to be executed.

The Penal Code and the Code of Criminal Procedure enacted for the Zone are adaptations of the codes now in force in Porto Rico, where they have been in operation several years and have proved satisfactory.

It was necessary to change almost every section, to eliminate large portions, and insert numerous provisions to meet special conditions existing in the Zone, or to supply matters omitted from the Code of Porto Rico by reason of the fact that certain Federal laws of the United States are in force in Porto Rico.

Much of the Porto Rican Code of Criminal Procedure related to juries. Trial by jury is not established by the code enacted by the Commission for the Canal Zone; but provision is made that in cases wherein the death penalty or imprisonment for life may be inflicted the circuit judge must call in two municipal judges, and if for any reason one or both of said judges can not sit in the trial, he must call one or two mayors, and if he can not secure two associates from these sources, he must call in two resident taxpayers. The circuit judge and the two associates so secured hear the testimony and determine the questions of fact; the circuit judge alone determines the questions of law.

In considering proposed legislation, the Commission adopted the plan of first examining the laws of the Republic of Panama on the subject, and for that purpose many of the laws, or important parts thereof, were translated; thereafter examination was made of the Philippine and Porto Rican laws on the subject, if any existed, and then exami-

nation was made of the Federal statutes and the State statutes of the United States, and from these several sources the enactments were evolved.

Not all the laws for which there is need have been enacted. Additional legislation is needed to provide for taxes on land, internal-revenue taxes, registration of land titles, court of land titles, and a civil code.

The Commission have deferred action on these several subjects until they could acquire full and complete knowledge of conditions and ascertain what was required to meet the necessities sought to be remedied. The investigation of these several matters is now in progress and the Commission are confident that the required enactments will be adopted within a reasonable time.

LEGISLATION BY CONGRESS.

The construction of the canal is to be conducted pursuant to the legislation enacted by Congress. Should legislation additional to that already existing become necessary, the matter must be referred to Congress. In other words, the Commission does not possess legislative powers as to the national endeavor of constructing the canal. The powers of the Commission as to such construction are similar to those of a board of directors of a corporation engaged in some enormous undertaking for which provision has been made by the stockholders; such provision, in this instance, being that set forth in the act approved June 28, 1902, entitled "An act to provide for the construction of a canal connecting the waters of the Atlantic and Pacific oceans." (32 Stats. L., 481.)

The Commission exercises the powers of legislation appertaining to the government of the Canal Zone. This authority is derived from the President pursuant to the provisions of the act approved April 28, 1904, as follows:

> That until the expiration of the Fifty-eighth Congress, unless provision for the temporary government of the Canal Zone be sooner made by Congress, all the military, civil, and judicial powers, as well as the power to make all rules and regulations necessary for the government of the Canal Zone and all the rights, powers and authority granted by the terms of said treaty to the United States shall be vested in such person or persons and shall be exercised in such manner as the President shall direct for the government of said Zone and maintaining and protecting the inhabitants thereof in the free enjoyment of their liberty, property and religion.

It will be noticed that the authority conferred by the foregoing provisions expires by limitation of time at the close of the Fifty-eighth Congress.

The Commission is of opinion that Congress should continue the authority conferred by the act above quoted "until otherwise provided by law." It is doubtful if the proper character and form of the permanent government of the Zone can be determined until after the canal is completed and the normal conditions thereafter prevailing ascertained. In view of the fact that the Secretary of War is now visiting the Canal Zone and examining existing conditions, and is conferring with the President and other officials of the Republic of Panama respecting certain questions as to the extent of the authority of the United States in and over the Zone, the Commission defers recommendations as to legislation by Congress until the matters in controversy are determined.

EXPENDITURES AND ESTIMATES.

The expenditures of the Commission to September 30, 1904, on the canal work, on engineering studies, on waterworks and sewerage systems for Panama and Colon, and for the government of the Canal Zone, including about $15,000 expended prior to the appointment of this Commission out of the appropriation of $10,000,000, may be briefly summarized as follows:

Salaries of Commission		$49,316.14
Salaries of all other officers and employees, Washington office		24,247.63
Traveling expenses, Commission and employees		13,836.54
Salaries:		
Health department	$36,776.52	
Police department	14,477.54	
Other zone employees	6,542.52	
Salaries and labor rolls:		
Engineering department	174,962.46	
Material and supplies department, disbursing office, and land administration	54,411.29	
		287,170.33
Supplies shipped to Isthmus		112,575.70
Miscellaneous expenses:		
At Washington, rent of offices, furniture, fixtures stationery, office supplies, cable and telegraph services, books, blanks, printing, etc.	15,761.31	
On the Isthmus, supplies, etc., for all departments	31,582.51	
		47,343.82
Total		534,490.16

This aggregate includes about $44,500 due on pay-roll accounts on the Isthmus at the close of September, but not paid until after that date, as the rolls for the last half of the month are not usually paid until about the 10th of the following month.

These expenditures, not including the September pay-roll item above referred to, have been classified by the auditor of the Commission as follows:

Itemized statement of expenditures made by the Isthmian Canal Commission from the date of the appropriation, June 28, 1902, to September 30, 1904, inclusive.

Classification of expenditures.	Expended from June 28, 1902, to June 30, 1904.	Expended from July 1, 1904, to Sept. 30, 1904.	Total expenditures.
Advertising		$46.60	$46.60
Animals and vehicles	$308.07	1,529.47	1,837.54
Books, professional	11.75	904.75	916.50
Courts		348.33	348.33
Explosives		8,213.70	8,213.70
Floating equipment		359.48	359.48
Freight and express	577.12	1,812.70	2,389.82
Fuel		124.70	124.70
Funerals		295.07	295.07
General office expenses, Washington branch	1,930.34	2,554.25	4,484.59
Hardware	3.60	526.51	530.11
Household furnishings	58.37	9,804.55	9,862.92
Instruments		2,048.33	2,048.33
Lighting		30.72	30.72
Lumber		26,285.03	26,285.03
Machinery		18,879.72	18,879.72
Materials and supplies not classified	772.89	9,708.14	10,481.03
Medical and sanitary supplies	456.95	18,540.31	18,997.26
Miscellaneous office and household expenses on the Isthmus	732.67	3,812.58	4,545.25
Mosquito bars	30.30	584.79	615.09
Office furniture	342.50	4,378.66	4,721.16
Photographic instruments and supplies		178.77	178.77
Plumbing supplies		2,164.13	2,164.13

Itemized statement of expenditures made by the Isthmian Canal Commission from the date of the appropriation, June 28, 1902, to September 30, 1904, inclusive—Continued.

Classification of expenditures.	Expended from June 28, 1902, to June 30, 1904.	Expended from July 1, 1904, to Sept. 30, 1904.	Total expenditures.
Postage paid		$61.12	$61.12
Postal supplies		710.20	710.20
Police equipment		727.04	727.04
Printing, binding, and stationery	$457.73	7,276.14	7,733.87
Printing plant and supplies		442.66	442.66
Railway construction material (except lumber)		1,194.91	1,194.91
Rent of property (except offices and quarters)	335.00	103.57	438.57
Salaries and per diem of commissions	20,700.29	23,048.75	43,749.04
Salaries, Washington branch office:			
Secretary's office	5,276.04	5,469.17	10,745.21
General counsel's office		1,875.00	1,875.00
Treasurer's office	517.66	1,528.75	2,046.41
Auditor's office		2,430.84	2,430.84
Miscellaneous		419.27	419.27
Salaries, police department	1,953.20	2,884.31	4,837.51
Salaries of engineer, assistants, etc	6,769.75	33,619.28	40,389.03
Salaries of medical and sanitary officers	940.61	12,612.73	13,553.34
Salaries, miscellaneous, on the Isthmus	2,941.37	13,575.32	16,516.69
State Department expenditures (confidential under sec. 291, Rev. Stats.)	3,985.00		3,985.00
Subsistence	2,266.91	2,563.92	4,830.83
Telegraph, telephone, and cable	198.64	2,278.14	2,476.78
Transfer of money	67.75	233.00	300.75
Traveling expenses	7,639.17	8,257.30	15,896.47
Typewriting machines	1,102.50	3,300.00	4,402.50
Wages on the Isthmus	27,438.89	162,219.63	189,658.52
Wire screens		2,131.59	2,131.59
Total	87,815.07	402,093.93	489,909.00

It is thought that the expenditures from the appropriation of $10,000,000 for a canal connecting the Atlantic with the Pacific Ocean to the end of the current fiscal year, June 30, 1905, including expenditures made prior to the appointment of this Commission, may reach an aggregate of $5,000,000, depending upon the time that may be required to get the construction work well under way after the Commission has adopted the final plans of the canal. In the following fiscal year the increasing necessities of the work may require an expenditure of $15,000,000 or even more.

Budget for the government of the Canal Zone for the current fiscal year ending June 30, 1905.

RECEIPTS.

Collected prior to September 30, 1904:			
United States gold	$1,583.80		
Silver, $22,152.73, or about	10,550.00		
Say	12,000.00		
Estimated for rest of fiscal year	27,000.00		
		$39,000.00	
Amount to be paid from United States Government appropriations		1,187,000.00	
			$1,226,000.00

EXPENDITURES.

Canal Zone government:		
Governor's office and executive secretary's office	$30,000.00	
Department of revenues	20,000.00	
Treasurer's office	4,000.00	
Department of justice	17,000.00	
Education	5,000.00	
Police department	60,000.00	
Public buildings and roads	24,000.00	
		$160,000.00

Canal Zone government—Continued.		
Health department:		
Improvements, buildings, and repairs	$368,500.00	
Equipment, supplies, etc	273,500.00	
Salaries and wages (including labor)	326,500.00	
Subsistence and sundries	97,500.00	
		$1,066,000.00
Total		1,226,000.00

Budget for the government of the Canal Zone for the fiscal year ending June 30, 1906.

RECEIPTS.

Estimated revenues	$140,000	
Amount to be paid from United States Government appropriations	956,460	
		$1,096,460

The foregoing includes the amount required from the funds at the disposal of the Commission for the health department, which has for convenience of administration been made a subdepartment of the Canal Zone government.

ESTIMATED EXPENDITURES.

Governor's office	$1,900		
Executive secretary's office	33,140		
Department of revenues	24,970		
Treasurer's office	4,650		
Department of justice	20,400		
Education	11,400		
Police department	80,620		
Public buildings and roads	78,000		
		275,080	
Department of health		821,380	
			1,096,460

The foregoing estimates of Canal Zone receipts and expenditures are substantially those of the governor of the Canal Zone. In some cases slight modifications have been made by the Commission. Notably among these is a reduction in the expenditures proposed by the department of health on the island of Taboga. The Commission does not accept the establishment of a convalescent station or branch hospital at that point as requisite within a year, and therefore has reduced the estimate to that involved in proper care of the property.

It is not probable that the expenditures estimated by the physicians in charge of the hospitals and of the other services in the health department will be required, but it is submitted, without material alteration, as the Commission's estimate, being intended to cover possible requirements and emergencies. An increase of the staff of the health and other departments will only be granted as necessity requires, and is not to be considered as authorized by this submission of an annual budget.

Condensed estimates of expenditures on which the foregoing summary is based.

Designation.	Salaries.	Labor supplies expenses.	Total.
Governor's office	$1,800	$100	$1,900
Executive secretary's office	24,640	8,500	33,140
Department of revenues:		1,500	
Main office	13,300		24,970
Postal service	4,170	6,000	
Treasurer's office	4,200	450	4,650
Department of justice	20,400		20,400
Education	6,900	4,500	11,400
Police department	70,620	10,000	80,620
Public buildings and roads:			
Roads		13,000	78,000
Buildings, repairs, and furniture		65,000	
Health department:			
Office of chief sanitary officer	20,900	200	
Office of director of hospitals	13,600	200	
Ancon Hospital	192,500	39,700	
Colon Hospital	64,480	18,600	
Emergency hospitals and dispensaries	29,520	16,000	821,380
Convalescent station on Taboga Island	900	2,000	
Quarantine service	33,220	11,600	
Sanitary service, Canal Zone	71,460	92,000	
Panama health office	12,200	10,700	
Colon health office	9,400	7,000	
Subsistence at hospitals and detention barracks		175,200	
Total			1,096,460

The receipts and disbursements of the municipalities of the Canal Zone are estimated for the fiscal year commencing July 1, 1905, and ending June 30, 1906, as follows:

Receipts:		
Land tax	$4,000	
Slaughter houses	11,000	
Retail sale of liquors	32,000	
Commercial taxes	27,500	
Fines	6,850	
Miscellaneous	2,200	
		$83,550
Disbursements:		
Salaries	38,610	
Charities	11,940	
Public works	12,500	
Rentals	1,900	
Jails	10,500	
Miscellaneous	8,100	
		83,550

There are submitted herewith: "A Financial Statement of the Treasurer of the Commission," "The First Annual Report of the Governor of the Canal Zone," a printed copy of the "Laws of the Canal Zone," being all of the laws enacted by the Commission to the date of this report.

Respectfully submitted.

J. G. WALKER,
WM. BARCLAY PARSONS,
WM. H. BURR,
B. M. HARROD,
C. E. GRUNSKY,
Commission

The Hon. WM. H. TAFT,
Secretary of War.

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INDEX.

Page.

Academy:
  Military 366
  Naval 991
Accidents:
  Navy 1004
  Railroad, prevention of 10
Agents, special 69
Agriculture:
  Dry land 1484
  Organization 19
  Secretary, report of 1443
Alaska:
  Conditions in 34
  Experiment stations 1533
  Fur seals 1585
  Game, protection of 1523
  Governor, report of 1219
  Justice, administration of 688
  Postal affairs 741
  Salmon fisheries 1584
  Surveys 1124, 1374
  Telegraph 304, 550
Alcohol, wood 279
Alkali land, reclamation 1506
Animal Industry, Bureau of 1453
Antitrust laws 1639
    legislation 1628
Appeals, pension 1189
Appointments, Division of, Post-Office Department 867
Appraisers, Board of General 69
Arbitration treaties 39
Arizona, report of governor 1227
Armor 997
Army:
  Automobiles 588
  Bakers 449
  Ballooning 588
  Clothing and equipage 416
  Courts martial 413
  Dentists 469
  Desertions 351, 387
  Discipline 387
  Distribution of 362
  Fortifications 390
  Health 291, 483
  Maneuvers 317, 355, 434
  Medical Department 394
    school 466
    supplies 477
  Messing 386
  Nurses 473
  Ordnance Department 396
  Pay Department 396
  Pay and allowances of officers 491
  Post exchange 354, 371, 389
  Posts, ungarrisoned 399

	Page.
Army—Contiuned.	
Quartermaster's Department	390
Recruiting	350, 368, 397, 479
Remuster cases	379
Signal Corps	396
Strength of	350, 384
Subsistence Department	394
Surgeons	469
Transport service	309, 426
Transportation	423
War College	302, 348
Art, National Gallery of	28
Artillery:	
Coast	298
Corps	357
Field	299, 349, 530
Mountain	530
Siege	533
Assay Commission, 1904	195
Attorney-General, report of	677
Attorney-general of Porto Rico, report of	726
Automobiles in Army	588
Bakers, army	449
Ballooning in Army	588
Band, Marine	1109
Banking:	
Central and South America	248
Growth in United States	241
Hawaii	247
Island possessions	246
Japan	253
Philippines	246
Porto Rico	247
Banks:	
Foreign	227
Liquidations	212
National, condition of	55, 199
Organization of national	207
Savings	236, 246
Shares and shareholders of national	206
Barracks, Marine	1091
Battlefield parks	319
Bee culture	1520
Beef-industry investigation	1629
Biological survey	1520
Blind, Maryland school for	1341
Bohio dam	1665
Boll weevil	1512
Bonds:	
Bonds and commissions, division of, Post-Office Department	881
Held as security for national banks	99
Owned by United States	83
Panama	88
Borax in food	1497
Brandy, grape, for fortification of sweet wines	277
Brigham, Col. J. H., death of	1551
Brokers, licensing customs	69
Building and loan associations	245
Buildings, public	71
Cable ships	581
Canceling machines, Post-Office Department	784
Capital and labor	7
Capitol Buildings and Grounds, report of the Superintendent	1343
Casa Grande Ruin	1324
Cases, important, decided by Supreme Court	692
Cash in vaults	94
Cemeteries, national	433

	Page.
Census:	
Bureau of	1568
Censuses 1790–1890	1215
Director, report of	1595
Philippine	345, 1570, 1596
Central Pacific debt	84
Chemistry, Bureau of	1496
Chief of Staff, report of the	346
Chinese exclusion	1589
Citizens, rights of American, abroad	41
Citizenship, laws	32
Civil governor of the Philippines	664
Civil service, Philippines	610, 669
Clearing-house exchanges	203
Clothing and equipage, Army	416
Coal mines, inspectors of, in the Territories	1278
Coal for Navy	929, 950
Coast Artillery	298
Coast and Geodetic Survey	1573
Coinage:	
Philippine	63
Subsidiary	60, 143
United States	154
Colon, city of	1671
Colorado:	
South boundary of	1372
Surveys	1375
Columbia Institution for the Deaf and Dumb	1339
Columbia Railway Company, Washington, D. C	1348
Commerce and Labor, report of the Secretary	1553
Commerce, Philippine	618
Commissary-General, report of the	439
Commission to the Five Civilized Tribes	1155
Compass office	955
Comptroller of the Currency, report of	199
Constabulary, Philippine	607
Construction and Repair, report of the Chief of the Bureau of	1015
Constructors, Corps of Naval	935
Consular service	28
Corporations:	
Bureau of	12, 14, 1561
Commissioner, report of	1611
Correspondence, Division of, Post-Office Department	806
Cotton:	
Boll weevil	1512
Special work on	1466
Statistics	1603
Counterfeiting	138
Court, Supreme	690
Courts, jurisdiction of district and circuit	686
Courts-martial	413
Crater Lake National Park	1308
Criminal prosecutions, delays in	33
Cristobal harbor	1664
Cuban records	638
Currency:	
Kinds of	108
Loans and	64
Paper, cost of	112
redemptions of	118
Philippine	596
Question	29, 86
Customs	67
Customs brokers, licensing	69
Dairy products, inspection of	1458
Dates, American	1465
Dead-Letter Office	804
Deaf and Dumb, Columbia Institution for the	1339

	Page.
Debts:	
Central Pacific	84
Public	91
Dentists:	
Army	469
Navy	1094
Derelicts	82, 933
Desertion, Army	351, 387
District attorneys, compensation of	687
District of Columbia:	
Expenditures and revenues	83
Reform school	730
United States jail	730
Documents, public	1217
Dry docks	935, 1019
Eclipse, total, for 1905	932
Education	1143, 1208
Education, Indians	1413
Elections, protection of	33
Employer's liability law	9
Engineer school	503
Engineers, report of Chief	494
Engraving and printing	66
Entomology, Bureau of	1512
Equipment, report of the Chief of the Bureau of	949
Experiment stations:	
Alaska	1533
Hawaii	1536
Office of	1527
Porto Rico	1536
Extravagance, caution against	7
Farm products (foreign trade)	1447
Farmers' institutes	1533
Farmers, wealth produced by	1444
Field artillery	299, 349, 530
Fires in forest reserves	1383
First Assistant Postmaster-General, report of	767
Fisheries, Bureau of	1581
Five Civilized Tribes, Commission to	1155
Floods, Kansas and Missouri	372
Food inspection	1496
Food standards	1497
Forage crop work	1471
Forecasts, weather	1449
Foreign banks	227
Foreign mail	829
Foreign policy	37
Foreign trade (farm products)	1447
Forest reserves:	
Fires	1383
Number of	1135
Planting on	1489
Sawmills on	1385
Stock grazing	1382
Timber, sales of	1385
Forestry, Bureau of	1486
Forests	22
Fortifications	496
Fox raising	1585
Fourth Assistant Postmaster-General, report of	867
Frederick the Great, statue of	510
Free delivery division of Post-Office Department	886
Freedmen's Hospital	1334
Fruit-marketing investigations	1476
Fruit-storage investigations	1478
Fuel, liquid	929, 1038
Fur seals, Alaska	1585
Game preserves	25

Page.
Game protection and introduction 1522
General Grant National Park 1300
General Land Office, report of the Commissioner 1359
General Staff 301
General Staff Corps 347
Geological Survey 1191
George Washington University 1347
Gold:
  Certificates 271
  Imports and exports 120
  In Treasury 105
  Silver, used in the arts 182
Government employees, unions of 11
Government Hospital for the Insane 372, 1326
Grant, General, National Park 1300
Guam 939
Guardhouses and prisoners, Army 388
Guns, experimental 529
Gun Factory (Naval) 994
Gun sights 999
Hague conference 39
Hall of Records 73
Harbor, river and, improvement 309
Hawaii:
  Debt 84
  Experimental stations 1536
  Governor, report of 1234
  Postal affairs 741
  Recommendations 36
Health of Army 291, 483
Hospital construction and repair 475
Hospital Corps:
  Army 470
  Navy 1085
Hospital ships 1098
Hot Springs Reservation 1314
Howard University 1336
Idaho-Montana boundary 1125, 1372
Immigration:
  Bureau 1588
  Naturalization and 30
  Philippines 626
Imports and exports of the precious metals 171
Imports and exports of gold during 1904 120
Indemnity certificates, Spanish 261
Indian Territory 1155
Indian reservations:
  Irrigation 1150
  Logging on 1148
Indians:
  Affairs of 1139
  Agreements with 1177
  Commissioner, report of 1411
  Condition of 26
  Education 1413
  Encounter between Sioux and sheriff's posse 1440
  Inspectors 1158
  Land, sale of 1422
  Liquor, sale of 1154, 1421
  Reservations, irrigation on 1150, 1412
Insane, Government Hospital for the 372, 1326
Inspector-General, report of 383
Inspector, Indian 1158
Inspectors of coal mines in the Territories 1278
Insular Affairs, report of the Chief of the Bureau 590
Insular possessions, defenses of 300
Insular purchasing agent 672

Page.
Insurance 15, 1629
Institutes, Farmers' 1533
Interest checks 271
Interior, report of the Secretary of 1113
Internal-Revenue Bureau:
Commissioner, report of 272
Receipts and cost of collection 70, 272, 281
Stamps 274
International Telegraph Conference 583
International Wireless Conference 584
Interparliamentary Union 85
Iona, N. Y., explosion at naval magazine 1003
Irrigation 22, 1150, 1412, 1540
Isthmian Canal:
Accounts of 84
Commission, report of 1647
Cristobal Harbor 1664
Law establishing government for Zone 1655, 1689, 1694
Organization 1660
Panama Railroad 1681
Jamestown tricentennial 27
Joseph, death of Chief 1438
Judge-Advocate-General:
Legislation recommended by 937
Report of 409
Labor:
Bureau of 11, 1563
Capital and 7
Laboratory of the Bureau of the Mint 194
Lands:
Allotted, leases and sales of 1144, 1145
Arid, reclamation of 1364
Commission 25
Indian, sale of 1366, 1422
Inherited 1146
Public, disposal of 1360
Public, unlawful fencing 1130
Laws:
Antitrust 1639
Citizenship 32
Corporation 1636
Criminal and penal, commission to codify 726
Employer's liability 9
Investigation of State and corporation 1618
National quarantine 29
Naturalization 30, 685
Legislation:
Antitrust 1628
Attorney-General, recommendations of 678
Judge-Advocate-General, recommendations of 937
Philippine 590
Lewis and Clark Exposition, exhibit of the Interior Department 1357
Library (Agricultural Department) 1548
Life-Saving Service 77
Light-House Board 1566
Liquid fuel 929, 1038
Liquor, sale to Indians 1154, 1421
Loan and building associations 245
Loans and currency 64
Logging on Indian reservations 1148
Louisiana Purchase Exposition:
Entomology, Bureau of, exhibit 1519
Forestry, Bureau of, exhibit 1495
Indian exhibits 1417
Interior Department exhibit 1351
Loan, Government 85, 99
Marine Corps exhibit 1103

Louisiana Purchase Exposition—Continued. Page.
Medicine and Surgery, Bureau of, exhibit 1100
Naval exhibit 940
War Department exhibit 319, 451, 472, 579
Machinery, data of naval vessels 1044
Mail:
Destructive matter in 739
Equipment 745, 826
Foreign service 746
Transportation 739
Manila 666
Manufactures, Bureau of 1561
Maneuvers, army 317, 355, 434
Maps, United States and State 1380
Marine Band 1109
Marine barracks 1091
Marine Corps:
Commandant, report of 1102
Distribution of 936
Recruiting 1109
Strength of 1110
Maritime Canal Company of Nicaragua 1358
Markets, oriental 29
Marksmanship (Navy) 926
Maryland School for Blind 1341
Matting industry 1461
Meat, inspection of 1454
Medals of honor (Navy) 44, 923
Medical associations, meetings of 1095
Medical Corps, Navy 933, 1081
Medical Department, Army 394
Medical School:
Army 466
Navy 1084
Memorial Bridge across Potomac 432
Merchant marine 29
Message of the President 7
Messing, Army 386
Metals, imports and exports of the precious 171
Military Academy 366
Military posts, construction work at 292
Military Secretary 318, 361
Military telegraph lines 576
Militia 310, 372
Mint, report of the Director of 142
Mint service 59
Monetary statistics of foreign countries 197
Money:
Circulation 106
In the United States 103, 175
Postal system 786
Public 66
World's stock 179, 224
Montana—Idaho boundary 1125, 1372
Mount Rainier National Park 1304
Mount Weather Observatory 1451
Mountain artillery 530
National banks:
Charters procured, number of 55
Condition of 199
Liquidations 212
Organization of 207
Shares and shareholders 206
National cemeteries 433
National Gallery of Art 28
National quarantine law 29
National quarantine service 75

	Page.
National parks and reservations:	
Casa Grande Ruin	1324
Crater Lake	1308
Establishment of	1391
General Grant	1300
Hot Springs	1314
Mount Rainier	1304
Sequoia	1300
Sullys Hill	1313
Sulphur Springs Reservation	1175
Wind Cave	1311
Yellowstone	1285
Yosemite	1290
National rifle competition	988
Naturalization, immigration and	30, 685
Naturalization laws	30, 685
Naval academy	991
Naval constructors, corps of	1021
Naval engineering	924
Naval gun factories	928
Naval hospital corps	1085
Naval medical school	1084
Naval museum of hygiene	1095
Naval Observatory, time signals	931
Navigation:	
Bureau of	1586
Report of the Chief of the Bureau	958
Navy:	
Academy	991
Accidents	1004
Additions to	1029
Appropriations	917
Armor	997
Dentists	1094
Desertions	990
Distribution of fleet	972
Efficiency	41
Engineering	924
General Staff, need of	959
Gun Factory	928, 994
Gun sights	999
Hospital ships	1098
Marine Corps	936
Marksmanship	926
Medals of honor	44, 923
Medical Corps	933
Naval constructors	935
Nurses (women)	1093
Pay Corps	934
Pharmacist	1087
Powder	995
Proving ground	1009
Recruiting	988
Reserves	991
Secretary, report of	917
Ships, receiving	1088
Supplies, purchase of	1071
Torpedoes	1000
Vessels	1033
Vessels, surveyed	1024
Vessels, torpedo	980
Vessels under construction	1030
War College	991
Warrant machinists	925
New Mexico, report of governor	1244
Nurses:	
Army	473
Navy (women)	1093

Page.
Officers, protection of Government 685
Oil, use of, on roads 1502
Oklahoma, report of governor 1253
Oleomargarine 276
Operations of the Treasury 53
Ordnance Department 396
Ordnance:
  Report of Chief of (Army) 512
  Report of the Chief of the Bureau of (Navy) 992
Oriental markets 29
Ornithology, economic 1521
Panama:
  Bonds 88
  Canal, payments on 99
  City of 1669
  Railroad 1681
  Treaty with 1649
Parks, battlefield 319
Pasig River improvement 668
Patent Office 1190
Patents, report of the Commissioner 1394
Pay Corps, Navy 934
Pay Department 396
Paymaster-General, report of the (Army) 487
Paymaster-General of the Navy, report of the 1068
Paymasters' clerks, status of (Navy) 1069
Paymasters' yeomen 1070
Penitentiaries:
  Atlanta, Ga 729
  Fort Leavenworth, Kans 728
  McNeil Island, Wash 729
Pensions:
  Appeals 1189
  Applications and rejections 1403
  Classified 1397
  Commissioner, report of 1397
  Cost, annual 1400
Pharmacist (Navy) 1087
Philippines:
  Census 345, 1596
  Civil governor, report of 664
  Civil service 610, 669
  Coinage 63
  Commerce 618
  Commission, report of 639
  Commission, recommendations of 662
  Constabulary 607
  Currency 596, 655
  Depositaries 604
  Extraditions 613, 662
  Friar-land controversies 602, 654
  Immigration 626
  Insular purchasing agent 672
  Legislation 590
  Louisiana Purchase Exposition, exhibit 627
  Mining laws 660
  Moro Province 642
  Progress 44, 329
  Public lands 661
  Receipts and expenditures 634
  Recommendations of Commission 662
  Religious controversies 654
  Revenues, disbursement of 614
  Scouts 397
  Students in the United States 630
  Tariff 620, 658
  Telegraph service 561, 608

Page.
Plague 76
Plant diseases 1470
Plant Industry, Bureau of 1459
Pneumatic-tube service 89, 742, 814
Porto Rico:
  Attorney-general, report of 726
  Commissioner of interior for, report of 1268
  Experiment stations 1536
  Postal affairs 741
Post exchange 354, 371, 389
Postmaster-General, report of 733
Postmaster-General, first assistant, report of 767
Postmaster-General, second assistant, report of 807
Postmaster-General, third assistant, report of 832
Postmaster-General, fourth assistant, report of 867
Post-Office Inspectors, Division of 902
Post-Office Supplies, Division of 799
Postal affairs:
  Alaska 741
  Box rents 785
  Canceling machines 784
  Electric-car service 743
  Envelopes, stamped 840
  Expenditures 735
  Fraudulent schemes 760
  Free delivery division 886
  Finances 833
  Foreign service 746
  Hawaii 741
  Inspectors 756
  Mail-messenger service 742, 814
  Mail service, general statement of 28, 807
  Money-order system 786
  Pneumatic-tube service 89, 742, 814
  Porto Rico 741
  Postmaster-General, recommendation of 733
  Postmaster-General, report of 733
  Postmasters, appointment of 871
  Postmasters, complaints against 871
  Railroad transportation 743
  Recommendations of the 733
  Rural free delivery 751
  Revenues 735
  Second-class matter, abuses of 850
  Steamboat service 742, 813
  Star routes 739
  Third and fourth class matter, consolidation of 748, 862
Potomac, Memorial Bridge, across 432
Powder (Navy) 995
Powder, smokeless 537, 1009
President's message 7
Printing, extravagance in 29
Printing, engraving and 66
Prisoners, United States 727
Prosecutions, delays in criminal 33
Public buildings 71
Public debt 91
Public documents 1217
Public Health and Marine-Hospital Service 73
Public Lands Commission 1389
Public lands, disposal of 1360
Public moneys 66
Public surveys 1368
Publications, Division of, Agricultural Department 1547
Puyallup lands, Washington 1436
Quarantine service, national 75
Quartermaster's Department 390

Page.
Quartermaster-General, Report of the 414
Railroad accidents, prevention of 10
Railroad affairs, office of 1219
Railroad grants 1375
Railroad, Panama 1681
Railway Mail Service 743, 822
Rebates 15
Recommendations:
  Philippine Commission 662
  Treasury, Register of 272
Record and Pension Office 376
Records, Hall of 73
Recruits, army 350, 397, 479
Recruiting:
  Marine Corps 1109
  Navy 988
Reform School, District of Columbia 730
Register of the Treasury, report of 257
Reports of:
  Agriculture 1443
  Attorney-General 677
  Attorney-General, Post-Office Department 760
  Census, Director of 1595
  Currency, Comptroller of 199
  Corporations, Commissioner of 1611
  Commissary-General 439
  Construction and Repair, Bureau of 1015
  Engineers, Chief of 494
  Equipment, Bureau of 949
  General Land Office 1359
  Indian Affairs, Commissioner of 1411
  Insular Affairs, Bureau of 590
  Interior, Secretary of 1113
  Internal Revenue, Commissioner of 272
  Inspector-General 383
  Isthmian Canal Commission 1647
  Judge-Advocate-General 409
  Marine Corps, Commandant of 1102
  Military Secretary 361
  Mint, Director of 142
  Navigation, Bureau of 958
  Ordnance (Army), Bureau of 512
  Ordnance (Navy), Bureau of 992
  Patents, Commissioner of 1394
  Paymaster-General (Army) 487
  Paymaster-General (Navy) 1068
  Pensions, Commissioner of 1397
  Philippine Commission 639
  Philippine Islands, governor of 664
  Postmaster-General 733
    First Assistant 767
    Second Assistant 807
    Third Assistant 832
    Fourth Assistant 867
  Quartermaster-General 414
  Signal officer 550
  Staff, Chief of 346
  Steam Engineering, Bureau of 1034
  Surgeon-General (Army) 460
  Surgeon-General (Navy) 1079
  Treasurer 90
  Treasury, Register of 257
  Treasury, Secretary of 47
  War, Secretary of 287
  Yards and Docks, Bureau of 942
Revenue-Cutter Service 79
Rice, production of, in United States 1460

Page.
Rifle practice 315, 376, 493
Rifles, new Springfield 300
River and harbor improvement 309
Road building, school for 1503
Road inquiries, office of public 1525
Road legislation, State 1526
Road materials, testing of 1499
Rural free delivery 751
Salaries and allowance division, Post-Office Department 768
Salmon fisheries, Alaska 1584
Sandy Hook proving ground 521
Saving banks 236, 246
Seacoast carriages 534
Seacoast defenses 293, 356
Second Assistant Postmaster-General, report of 807
Secret Service 82
Sequoia National Park 1300
Shipbuilding in navy-yards 1023
Ships, naval receiving 1088
Signal Corps 349, 396
Signal Corps, wireless system 585
Signal Officer, report of the Chief 550
Signaling, visual 567
Silk culture 1519
Smallpox 75
Smokeless powder 537, 1009
Soils, Bureau of 1503
Soldiers' Home, District of Columbia 405
Solicitor of the Treasury 726
Spanish indemnity certificates 261
Special agents 69
Standards, Bureau of 1591
Star routes 739
Statistics, Bureau of:
  Department of Agriculture 1524
  Department of Commerce and Labor 1574
Statue of Frederick the Great 510
Steamboat-Inspection Service 1577
Steam Engineering, report of Chief of Bureau of 1034
Stock grazing in forest reserves 1382
Strength of Army 350
Submarine defense 296
Subsidiary coinage 60
Subsistence Department 394
Sugar-beet seed 1461
Sullys Hill Park 1313
Sulphur Springs Reservation 1175
Supplies and Accounts, Bureau of (Navy Department) 1068
Supreme Court 690
Supreme Court, important cases decided by 692
Surgeons, army 469
Surgeon-General, report of the (Army) 460
Surgeon-General of the Navy, report of 1079
Surveys:
  Alaska 1374
  Colorado 1375
  Public 1368
  Rejected and suspended 1371
  Uintah Indian Reservation 1374
Tariff, Philippine 620
Taylor, Rear-Admiral Henry Clay, death of 941
Tea, American 1464
Telegraph systems:
  Alaskan 304, 550
  Philippine 561, 608
  War Department code 588
  Wireless 82, 584, 932, 953, 1451, 1593

Page.
Telescopic sights 534
Territories, report of governors:
Alaska 1219
Arizona 1227
Hawaii 1234
New Mexico 1244
Oklahoma 1253
Third Assistant Postmaster-General 832
Time signals, Naval Observatory 931
Tobacco investigations 1509
Torpedoes (Navy) 1000
Transport service 309, 426
Transportation, Army 423
Treasury Department:
Operations 53
Receipts and expenditures 47
Secretary, report of 47
Solicitor 726
Treaties, arbitration 39
Treaty with Panama 1649
Trust companies 87
Tuberculosis 1097
In cattle 1457
Turbine propulsion 929
Unions of Government employees 11
Uintah Indian Reservation, Surveys in 1374
United States jail, District of Columbia 730
United States prisoners 727
University, George Washington 1347
Vessels in United States Navy 1033
Vessels surveyed (Navy) 1024
Vessels under construction 1031
Vice-admirals 921
War College:
Army 348
Navy 991
War Department:
Secretary, report of 287
Telegraphic code 588
War records 382
Washington, D. C 16
Washington and Georgetown Railway Company 1348
Washington Gaslight Company 1349
Washington Hospital for Foundlings 1342
Wealth produced by farmers 1444
Weather Bureau 1449
Weather forecasts 1449
Wind Cave National Park 1311
Wireless telegraphy 82, 584, 932, 953, 1451, 1593
Wood alcohol 279
Yards and Docks, report of the Bureau of 942
Yellow fever 75
Yellowstone National Park 1285
Yosemite National Park 1290

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